The RUBBER AGE

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FIRESTONE TO BEGIN WORK AT ONCE ON LIBERIAN RUBBER PLANTATIONS

Harvey S. Firestone, Jr., Sails for London to Establish an Office for $100,000,000 Company. To Build a Harbor at Monrovia, Principal Liberian Port

No news has interested the rubber industry for some time as much as did the announcement by Harvey S. Firestone, president of the Firestone Tire & Rubber Co., Akron, that arrangements have been completed for the production of rubber on a vast scale in Liberia. During a recent interview with reporters at the Hotel Plaza in New York, Mr. Firestone said that the Firestone Plantations Co., of which he is president, would invest $100,000,000 in developing its concession and would eventually have 1,000,000 acres of rubber trees growing on what is now bush and jungle.

"It is my intention to plant as much land as quickly as it is physically and economically possible, because all Government and other figures show there will be a shortage of rubber soon," said Mr. Firestone.

To Plant Twenty Tracts

"I have arranged for twenty separate planting organizations to commence work at once in twenty separate districts of the country. Each of these organizations will include an experienced planter and assistants from the Far East, medical staff, sanitary engineer, civil engineer, mechanical engineer, architect and builder, forester, soil expert and their staffs. Thousands of native laborers will be employed.

"Because it is an undeveloped country it is necessary for us to not only build our own buildings and houses for our American and European workers, but to ship over the household furniture and equipment as well as foodstuffs."

A contract with the Liberia Government enables the American company, Mr. Firestone said, to survey the whole of Liberia and to choose here and there the land best suited for rubber productions until 1,000,000 acres have been taken over. His plans call for the employment of more than 300,000 natives, besides a great organization of whites.

One 2,000-acre plantation—a going concern in British hands— was purchased outright by the company, and its production of thousands of pounds of raw rubber per month is coming to this country, though the plantation is being used mainly as a great nursery of rubber trees for the new ones.

Facts About Liberia

Liberia, the scene of Harvey S. Firestone's project, is situated on the West African coast of northern Guinea between the British colony of Sierra Leone on the northwest and the French Colony of the Ivory Coast on the southeast. It has a total area of about 41,000 sq. mi., which is similar to the area of the State of Ohio. The population has been estimated at over 2,000,000, of which about 65,000 are said to be civilized negroes who have become Liberian citizens. The rubber trees which are indigenous, include *Funtumica elastia* and *Landolphia owariensis*. Although Hevea is not a native rubber, the soil and climate conditions have already proved favorable to its growth.

His million-acre project will be the greatest rubber plantation in the world, Mr. Firestone said, and America's greatest investment in the tropics, involving practically the physical remodeling of a whole country—the building of harbors, roads, towns, hospitals and other public works.

The new corporation has already let a contract to the J. G. White Engineering Co. of New York to build a harbor at Monrovia, the capital and principal city of Liberia. Liberia now has no shipping facilities, the ships riding off the coast and landing and taking shipment with the help of surfboats when the weather favors. A great breakwater will be constructed so that ships may be in shelter and unload from lighters. It will take five or six years for the plantations now being set out to mature, and until then at least two shipping lines which now touch Liberia will be sufficient to carry freight for the Firestone Plantations Co. Later, he intimated, the company might enter the shipping business.

The projected $100,000,000 commercial

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PLAN TO BEGIN WORK ON LIBERIAN PLANTATIONS

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empire which will be planted in Africa would have gone to the Philippines, according to Mr. Firestone, except for the fact that native politicians two years ago opposed the invasion of American capital on a large scale, for fear that heavy American investments there would postpone the day of Philippine independence. Mr. Firestone said he understood that a change of feeling had taken place in the islands, and that rubber growers would be welcomed there now.

Climate is Healthy

M. A. Cheeke, a rubber planter, who carried on part of the exploration work that preceded the negotiations with the Liberian Government, said that, in spite of its position on the west coast of Africa, within a few degrees of the equator, the climate of Liberia was pleasant and healthy.

"If Liberia was in easy distance of this city, New Yorkers would never go to Florida," he said. "There is a variation of temperature from 55 to occasional extremes of 105. It is very much like Florida, with better fishing. There is practically no hunting, however, the dense population having killed out most animal life. This is one reason for its healthiness, as there are few mammals to carry disease parasites. There is some malaria, but it will be stamped out entirely. The average native is a man of powerful build and a fine worker. This abundant labor supply is one of the chief advantages of the place."

One reason for the fine physique of the natives, it was said, is that they carry burdens of all sizes on their heads, so that they develop tremendous shoulders and necks. Carying forty or fifty pounds all day long on his head is said to be nothing to a native Liberian.

Cheap Production Assured

Cheap production was assured, Mr. Firestone said, because the native Liberian will work for less than the Malays, who receive a shilling a day for labor on the British plantations. He said that there will be no openings for American negroes, both because the rate of pay would not attract them and because the Liberians did not welcome black immigrants from America, although the Government and the civilized part of the country was originally founded by American negroes—escaped slaves and freedmen who were sent to Liberia by abolition societies.

The occasion for Mr. Firestone making his plans public was his visit to New York to see his son, Harvey S. Firestone, Jr., and Mrs. Firestone, Jr., off to Europe.

The son will open an office of the Plantations Company in London. London is the business center of English rubber-producing activities, and Mr. Firestone, Jr., intends to keep in close touch with rubber growing affairs there and to take advantage of the experience of rubber-growing experts.

Mr. Firestone said:

"I have been very active recently in Akron getting together the organization and equipment for Liberia. The country is wholly undeveloped either agriculturally or industrially and my effort is naturally a pioneer one. It is my intention to plant up as much land as quickly as it is physically and economically possible, because all Government and other figures show there is a shortage of rubber now.

"While organizing for the Liberian enterprise I have also taken a lease on 35,000 acres of land in Mexico, upon which there is located 350 acres of Hevea trees—the best rubber-producing tree known today—and several thousand acres of Castilloa rubber trees.

"I have been investigating in Mexico for two years and plan to carry forward an experiment upon this plantation. I sent two experienced planters to Mexico two years ago to look over this property, but they were forced to abandon any attempt at further investigation at that time because of a revolution. I now have two men in Mexico City organizing a force for this operation, and, if political and labor conditions will permit, expect to prove whether Mexico is a suitable place for rubber production."

Asked why Liberia had been chosen for the development, Mr. Firestone said:

"When I first started on this my preference was for the Philippine Islands. I preferred to go it under the American flag, and I sent three experienced rubber growers from the Malay Peninsula there to investigate. The Philippine Islands have the soil and the climatic conditions and, I believe, have sufficient labor for such a plantation. But their land laws and their governmental conditions made it impossible to go there and invest capital. In fact, I don't think that the Philippine Islands at that time—two years ago—wanted us to come.

"When these investigators returned from the Philippines I sent two of them into Central Mexico.

"The 35,000-acre rubber plantation was started. Then a revolution came and they had to go out through Guatemala. They went down through Central America. They found plenty of opportunity for growing rubber in Central America, but the labor conditions and land laws were not favorable.

"Then I looked toward Liberia, where this country has a moral protectorate, if not a direct protectorate. The experts found conditions there in all respects favorable. The Liberian Government was well disposed toward the project and gave us the greatest concession of the kind ever made.

"American capital has always shied at the tropics and preferred home investments. The British rubber growers have always laughed at the idea of Americans entering that market, because of our attitude toward tropical investments. But I want it understood that this is wholly serious, and the first real American bid at growing our own rubber. We have to start at the bottom, plant the country and build everything we need, but conditions are highly favorable, and our labor cost will be fifty per cent less than that in the Malay Peninsula."

Not Interested in Florida

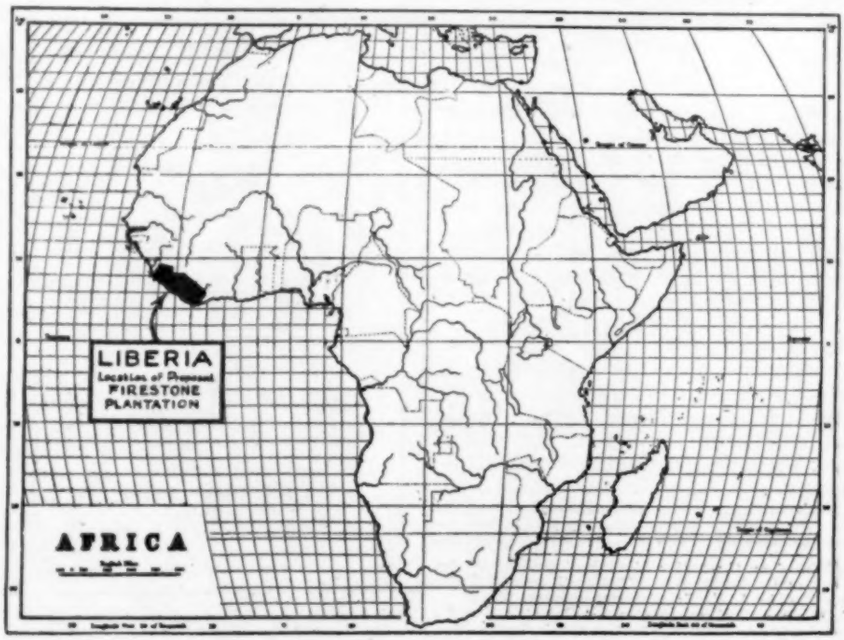
Asked about the 300-acre experimental rubber plantation in Florida, Mr. Firestone said:

"I am not interested in that. That is an experiment of Mr. Edison's and Mr. Ford's. I can't see how it can be grown successfully there. In Liberia, we pay practically nothing for a million acres. The cost of the ground in Florida would be heavy, not considering taxes, labor and land laws."

Mr. Firestone said he was not impressed with the possibility of "milking rubber trees by machinery," in place of cheap labor. At present, one native tends about three acres of trees, keeping the sap, or latex, of the crude rubber running the year round, and no practical substitute for the native has yet been proposed.

Asked if Henry Ford was interested in the $100,000,000 investment, Mr. Firestone said:

"I don't want to say anything about that. This is the Firestone Plantations Company. I am not prepared as yet to say anything about the financing of it."



BRITISH COLONIAL OFFICE HEARS PLEA FOR REPEAL OF RESTRICTION

Deputation Representing Rubber Manufacturers and Motor Interests Points to Evils of Control. Plea Follows Big Advance in Prices and Rise in Rubber Shares

A deputation representing British rubber manufacturers and motor car interests recently called at the Colonial office in London to present a plea for the repeal of the Stevenson Act which has restricted exports of crude rubber since November, 1922. The deputation was received by W.G.A. Ormsby Gore, Undersecretary of State for the Colonies who promised to place its views before L. C. M. Amery, Colonial Secretary, who is giving personal attention to the rubber situation. The deputation pointed out that the Stevenson plan had well served its purpose and was now working as a serious detriment to British trade.

Rubber prices, it was explained by Alexander Johnson, Chairman of the India Rubber Manufacturer's Association, on behalf of the deputation, showed abnormal fluctuations during the summer and quotations for the spot trade now stand at the high level of 4 shillings per pound as compared with 18 pence before the Stevenson act went into effect.

Will Please American Manufacturers

The action of the British industry will come as a pleasing surprise to American rubber manufacturers, who have long protested against the operation of the Stevenson act, which they felt kept prices at high level by limiting the amount of rubber available to the markets of the world.

The interview lasted two hours and the conclusion is contained in an official statement issued by the Colonial Office to the foregoing effect. The adverse effect of the Stevenson act upon the unemployment situation in England also was emphasized.

Following the sharp rise in the price of rubber on October 6, due chiefly to large buying orders from America, the London rubber share market again opened with a burst of activity on the following day and there was excited bidding for shares. This tendency, however, soon became irregular and reliable quotations were difficult to obtain, as the brokers were unable to keep in touch with the fluctuations owing to the great pressure of the market.

The steadily growing list of companies which have lately paid substantial dividends, as compared with little or nothing a year ago, plays no small part in swelling the demand for rubber shares. Apart from the effect on the market, the psychology of the sum being divided in dividends just now represents a substantial total—a good portion of which is being utilized in the purchase of additional shares.

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Competition for bus tire business has resulted in a number of Akron manufacturers reverting to the old system of selling tires on a mileage basis to the large bus operators. Most manufacturers had agreed some time ago not to solicit mileage contracts from commercial accounts but a few did not keep faith, it is said, and the practice is now becoming general in the industry. It is not advertised and some companies deny that they are doing it. It is admitted by many tire officials that the sale of tires on a mileage basis is not good business, although competition forces some manufacturers to go after such business against their better judgment.

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PROPOSES TAX ON RUBBER CONSUMED TO FORM FUND FOR EXPLOITATION

Goodyear, Goodrich and Firestone Approve H. N. Whitford's Plan for Creating a Fund by a Self-Imposed Tax to Exploit Plantations in the Philippine Islands

That the plan of Harry N. Whitford, formerly chief of the Crude Rubber Section, Rubber Division, and now connected with the Rubber Association of America, is being given serious consideration by American rubber manufacturers is seen in the recent approval of the project by officials of the Goodyear Tire & Rubber Co., the B. F. Goodrich Co. and the Firestone Tire & Rubber Co. Mr. Whitford, who is continuing his investigations of new sources of rubber, suggested that a self-imposed tax on rubber consumed by participating manufacturers be used for the purpose of exploiting new plantations on United States soil. By this means, it is thought, the future stability of the industry would be secured without great tax on capital and in a manner equally favorable to small as well as large manufacturers.

Dr. Whitford, an acknowledged authority on crude rubber, was placed in charge of the investigations of the U.S. Department of Commerce into the possibilities of raising rubber on American soil which were undertaken in the early part of 1923. Previously he had been for six years chief of investigations for the Bureau of Forestry of the Philippine Government and for a similar period professor of tropical forestry for Yale University. Following the Government investigation into rubber sources, he was invited to join the forces of the Rubber Association for the purpose of assisting in reaching a satisfactory solution of the crude rubber situation.

When interviewed, P. W. Litchfield, vice-president of the Goodyear Tire & Rubber Co., and Harvey S. Firestone, president of the Firestone Tire & Rubber Co., both indorsed the plan.

"I will gladly assist in such a move," said Mr. Firestone. "It will take a great deal of money to establish enough rubber plantations to supply American manufacturers. Collective effort will accomplish that aim.

"The move will not affect my Liberian plans," he continued. "Regardless of the steps taken by the other manufacturers I shall continue with my project.

"I understand that the Philippine scheme has advanced sufficiently now to warrant rubber manufacturers making plans for new legislation which will provide for the establishment of several large plantations. At present the largest land grants obtainable are but 2,500 acres in extent. Changes in the law opening 50,000 grants to occupation are in prospect.

"The method of financing—by a tax on all rubber imported—will raise a much larger sum than any one concern could possibly put behind such a project, without straining any of those who contribute toward it."

Dr. Whitford's proposal has the obvious merit of taxing each manufacturer only to the extent in which he is directly interested in stabilizing the business. It reduces very largely the speculative element, and while wholly cooperative would not react on the competitive alignment of the industry

It is estimated that the amount to be raised in this way would approach $15,000,000 a year which would be more than sufficient for carrying out the plan upon as large a scale as might be practicable. Plantations in the Philippines are definitely contemplated. At the same time it has been pointed out that greater security and less disturbance to labor might be developed, as well as more rapid results, by a diversified program involving parallel projects in tropical America, Africa as well as the Middle East.

In exactly what way the project, if adopted, will be applied, remains more or less to be determined. The formation of a huge rubber corporation to centralize and control the project in its various ramifications would be a natural first step. Actual development work might be undertaken by subsidiaries. A further possibility that has been discussed is that of protecting private investors by guaranteeing the minimum price of rubber produced by them under certain stated conditions.

To Make Improved Gears

Foote Bros. Gear & Machine Co., Chicago, recently purchased equipment for the manufacture of the modern type of herringbone gears without the center groove. The equipment was installed and ready for operation on October 15th and the Foote Co. is now in a position to produce "Backbone", Herringbone Gears, in all standard sizes. They will also produce a complete line of Herringbone Sped Reducers of the heavy-duty type, comprising single, double and triple reduction units up to 125 hp. capacity and reduction ratios up to 120 to 1.

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ANOTHER TIRE PRICE INCREASE ANNOUNCED

The fifth increase this year in the price of tires was recently announced by a number of companies, including Goodyear, Goodrich, Fisk, Firestone and Miller. The United States Rubber Co. and others, although they have not as yet increased prices at this writing, are expected to make the announcement shortly.

The Goodyear Tire & Rubber Co. raised its prices, with the exception of smaller sizes, 15 per cent on casings and 20 per cent on tubes and truck tires, effective Oct. 17. The increase amounts to approximately 50 per cent on Goodyear tires since last May, although prices are still below those of 1920 and only a little above the 1923 level. The last previous increase was on July 18. Since that time crude rubber has climbed back to $1.02 a pound on Oct. 17.

The B. F. Goodrich Co. announced an increase ranging from 10 to 20 per cent on tires and casings and the Fisk Rubber Co. increase was 10 to 20 per cent on tires and 20 per cent on tubes. The Firestone Tire & Rubber Co. announced an advance of 15 per cent on all pneumatics and tubes and one of 20 per cent on solids, effective Oct. 19. The advance of the Miller Rubber Co., which was effective Oct. 17, was 15 per cent on tires and 20 per cent on tubes.

Appraise Pittsburgh Plant

The factory of the Pittsburgh Rubber Co., East Palestine, Ohio, against which a petition in involuntary bankruptcy was filed in United States District Court at Cleveland some weeks ago, was recently appraised. The company ceased operations on September 5. Attorney Blaine H. Cochran is receiver for the company. Officers are William S. Thomas, Vice-president and General Manager; J. S. Morrow, Secretary and Treasurer; G. B. Thomas, Sales Manager and Chemist and Clarence Bell, Superintendent.

PROPOSE NEW SCALE TO GOVERN RUBBER EXPORTS

With respect to release of additional rubber for export purposes, the following scale proposed by L. C. M. Amery, British Secretary of State for the Dominions, to the Ceylon Government, has been made public:

When the average London price falls below 15d, exportable rubber would be decreased 5 per cent for the ensuing quarter; when below 14d the maximum would be decreased 10 per cent; when below 13d, decreased 15 per cent; when below 1s, decreased 20 per cent.

When the average London price is not less than 15d, exportable rubber would be increased 5 per cent; if the price is less than 18d the increase would be 10 per cent; if less than 21d 15 per cent, and if less than 24d 20 per cent.

The Ceylon Government approved the proposals and recommended that they be put into operation from February 1, instead of November 1.

If the recommendations are adopted, it it estimated that the exportable maximum will be 85 per cent in the November-January quarter and 105 per cent in the February-April quarter.

M. S. KELLEY RESIGNS TO JOIN GOODYEAR EXPORT

M. S. Kelley, treasurer, controller and a director of the Goodyear Tire & Rubber Co., of California and the Goodyear Textile Mills, recently tendered his resignation from both companies in order to accept an appointment as assistant manager of the Goodyear Export Co., Akron. W. S. Downs will succeed Mr. Kelley as controller and treasurer of the rubber company and the textile mills.

Brunskill Quits Kelly

E. I. Brunskill resigned as foreman of the solid tire department of the Kelly-Springfield Tire Co. on Oct. 1 after having been with that company since it produced its first tire 25 years ago. His resignation was the result of a desire to remain in Akron after Kelly decided to concentrate all of its production at Cumberland.

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GALLAGHER SEES GREATER MENACE IN LABOR PROBLEM THAN IN RESTRICTION

Vice President of U.S. Rubber Plantations, Inc., Maintains Limitation of Exports Releases Labor Which Cannot Be Recalled at Short Notice When it is Needed

W. J. Gallagher, vice-president of the U.S. Rubber Plantations, Inc., and manager of plantations for the U.S. Rubber Co., New York, states that underlying the direct influence of the Stevenson Act in forcing up the price of crude rubber is the labor situation in the Federated Malay States, which is closely related to restriction of exports. The labor situation is so serious at present, says Mr. Gallagher, that it constitutes a greater menace to the future than the British plan of controlling production which causes it.

Important Figure in East

Mr. Gallagher, who recently returned to the East following his first visit in over two years to his home in Ireland and to the United States, is an important figure in the rubber growing industry in the East inasmuch as he is in complete charge of the plantations of the U.S. Rubber Co., which include about 130,000 acres located three-fourths in Dutch and one-fourth in British territory. About 76,000 acres of these holdings are under cultivation—an area roughly nine times that of Central Park, New York. He says there are 8,000,000 rubber trees standing, "aged from one day to 15 years" and emphasizes the fact that planting must be continuous in order to secure continuous production of latex. Between 15,000 and 16,000 natives and 170 Europeans are constantly employed, there being one native foreman to every 15 laborers and a white overseer for every 150 natives. Gallagher, a graduate of Dublin University and Oxford, specialized in forestry, went out to the Federated Malay States, where he was head of the Department of Agriculture when, in 1912, he was secured by the United States Rubber Co. to assume direct local charge of its big project.

Labor becomes the critical factor in rubber cultivation, according to Mr. Gallagher, for two reasons; first, because it is a prime requisite of the business, and second, because of the elements of supply and demand. From planting to maturity of the trees constant working of the plantations is necessary to force growth and maintain an unceasing battle against other vegetation and insect pests. If cultivation ceases the land quickly reverts and previous investment is in part lost. Furthermore, five to six years are required to bring new trees into bearing.

Rubber and tobacco culture in the Malay States and Dutch East Indies, both divergent, but highly developed industries, long ago exhausted the local labor supply, with the result that help must be imported, largely from India, under a three-year indenture system which is supervised by the Government. Under the operation of the local labor commission, all planters are taxed at so much a head for labor imported, this fund defraying the entire cost of importation up to a certain constructive point. From that point the planters individually pay transportation and living expenses to their own plantations.

Another Phase of Restriction

Under this system it is obvious that the British restriction plan is capable of causing serious disturbance to the industry. Tapping is practically continuous, the trees being worked in tracts, which are alternately tapped and rested under the so-called A and B system. Therefore, under temporary restriction surplus rubber can be produced and stored, but beyond certain limits production must be reduced, and since idle labor is unprofitable, labor must be released. When, on the other hand, more rubber

(Continued on Next Page)

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SEES GREATER MENACE IN LABOR THAN RESTRICTION

(Concluded from Page 44)

is released, especially if insufficient notice is given, months may elapse before new labor can be procured and trained.

Thus the Stevenson plan is proving exceedingly cumbersome and unweildy, as well as highly distasteful to the local producing interests. Some of them regard the plan as a highly theoretical measure, devised to protect British investors from the penalties of speculation and over-planting years ago, but quite incapable of keeping pace with the current needs of the industry, let alone anticipating the future.

Quite significant incidents of last three weeks, therefore, were: the reversion of the New York market to $1 a pound for spot rubber; the statement of Paul W. Litchfield, vice-president of the Goodyear Tire & Rubber Co., that there will probably be an acute shortage of rubber for the next five years; the announcement in London of a final dividend of 12½ per cent by the Singapore United, making a total of 17½ per cent earnings for the year by this rubber producing concern; and finally the call at the Colonial Office of a deputation representing manufacturers of rubber and the British automobile industry, to plead for the abolition of the Stevenson plan, which was represented as having well served its purpose, but as now working a hardship on British trade.

It is estimated that within five or six years another million acres will be brought under cultivation in the East, whereas a planting program of 1,500,000 acres has been suggested to the British. Another estimate places the requirement at 1,715,000 additional acres in the next five years, which would mean planting 343,000 acres a year on the average, which is deemed almost impossible. Failure to provide additional cultivation at this rate may mean serious shortage.

Mohawk Reports Profits

The Mohawk Rubber Co., Akron, recently reported that it earned $365,701.99 during the first eight months of 1925 and total assets are reported to be $3,486,170, against current liabilities of $898,829.53. After deducting funds to meet dividends on $1,900,443.30, earnings on common stock approach $15 per share. Reserves and surplus after providing funds to meet the income payment due Sept. 1 amounted to $584,995.80. In addition, the capital surplus was $18,902. During the period covered by the report the Mohawk showed a profit of 12 per cent on the turnover of its products.

Ott Working Overtime

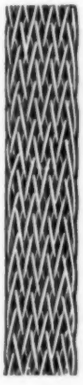
According to J. J. Ott, president of the Ott Rubber Co., Dubuque, Iowa, the factory force is working overtime to supply the demand for the company's tubes, the only product it manufactures.

RUBBER IMPORTS SHOW DECLINE IN SEPTEMBER

According to statistics recently issued by the Rubber Association of America, the total importations of crude rubber into the United States during September showed a decrease of almost 2,000 tons when compared with the receipts of the same month in 1924. The greatest decline was in plantations; 24,777 tons were imported last month, against 28,362 tons in September, 1924.

The decline in plantations was partly offset by increased importations of Paras and Centrals. Paras increased from 123 tons in September, 1924, to 1,486 tons last month. Centrals increased from 85 tons in September, 1924, to 500 tons last month. Guayule also had a slight increase, from 167 tons to 170 tons, comparing the same months. In September, 1924, no Manicobas or Matto Grossos were received but 16 tons were imported last month. Africans showed a decline in the past month as only 122 tons were received, against 263 tons in 1924.

Singapore shipped 8,437 tons of plantations in September, Belawan-Deli shipped 3,591 tons, London shipped 2,804 tons, Penang shipped 2,246 tons, Colombo shipped 2,119 tons, Batavia shipped 1,605 tons and Port Swettenham shipped 1,546 tons. As usual, New York received the bulk of arrivals, with 20,419 tons of plantations coming in September. Baltimore received 2,771, Boston 261 and Philadelphia 230. Pacific ports received 1,096 tons, of which 872 were shipped to Los Angeles and 224 tons to Seattle.



Perfect Beads

Entire freedom from bead trouble in the construction of straight side tires is assured by the use of either National "(Patent)" High Tensile Strength, Flat Woven, Bead Braid or our new (Pratt Patent) Bead Cables. These cables, made to dimensions specified, have seven strands, yet only one piece of wire is used without soldered, welded or brazed joint.

Write for working samples of either National flat braid or Pratt cables (no charge to tire manufacturers) and full information as to our products and service.

Our engineering department tests beads and furnishes complete confidential reports as to their stretch, set and bursting point, without charge. Inquiries solicited regarding this special service.

National Standard Company
Niles, Michigan

DIPHENYL-GUANIDINE

Manufacturers who are utilizing the possibilities of reclaimed rubber say that Dovan Diphenyl Guanidine is the best accelerator to use with these stocks. In their experience it has proved more efficient and lesser quantities are necessary.

DOVAN CHEMICAL CORPORATION
THIRTY CHURCH STREET NEW YORK

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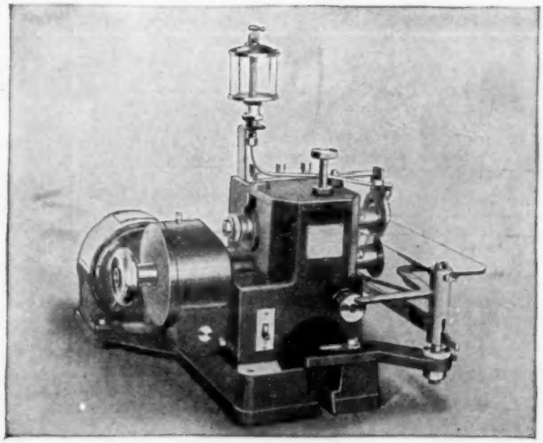
WILLS ELECTRIC TRIMMING MACHINES



MODEL DE
Operate from Lighting Circuit
Shipped Ready to Run

Designed to trim Heels, Soles and Mechanical Rubber Goods. Absolutely dependable in action. Extremely easy to operate.

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ARTHUR JACKSON WILLS CO.
Established 1915
NORTH BROOKFIELD MASS., U. S. A.

FACTORY EQUIPMENT

SAY LOUISVILLE FILTER CUTS DEWATERING COSTS

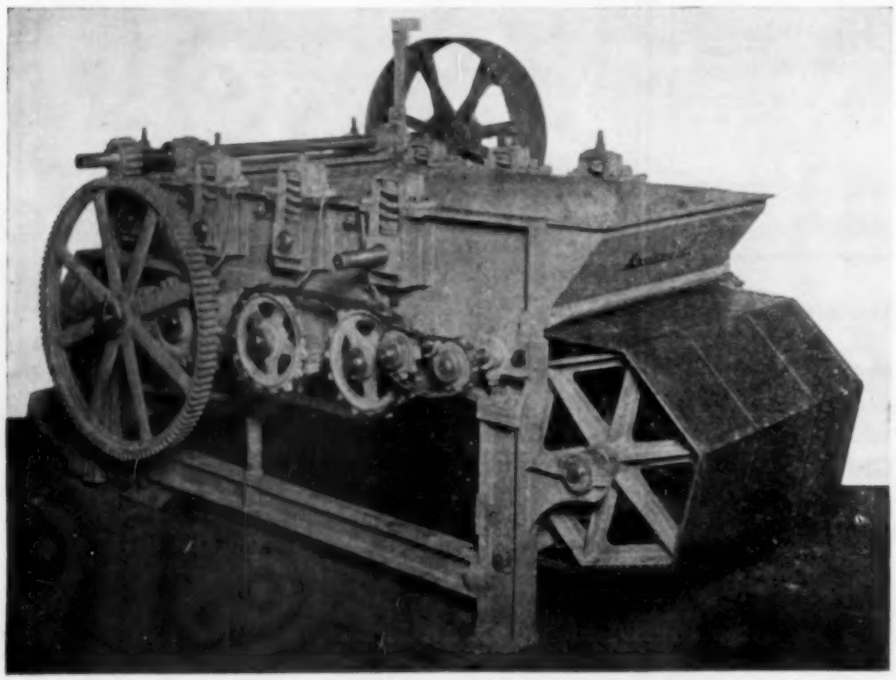
The Louisville Drying Machinery Co., Louisville, Ky., call attention of manufacturers to the greatly increased use of scrap rubber due to the high price of crude. This scrap rubber must be processed and washed but if it is not pressed, the drying cost is excessive, and if it is pressed inefficiently, the drying cost is too high. The manufacturers claim that the use of the Louisville Continuous Press will greatly lower dewatering costs. Other claims which substantiate this are that the press delivers continuously up to a ton of pressed shoddy per hour, uses less than three horsepower, does not jam, that the residual moisture is less that 30 per cent and that the press fluffs the shoddy making it easier to dry.

Low Moisture Scrap

Under usual operating conditions the press will deliver scrap rubber with a lower moisture content. Other types are said to ordinarily dewater to less than 45 per cent moisture content which means that, in order to deliver the same amount of dried rubber, the dryer using the Louisville Continuous Press would have to do only 50 per cent as much work as one operating with the other type. This means a great saving in steam consumption and capacity. As the press will not jam, operations will not have to be suspended for this reason. The press when delivering 2,500 pounds of pressed rubber per hour will consistently use less than three brake horse power.

The water squeezed from the Louisville Continuous Press contains considerably less rubber in suspension than from the screw type, the manufacturers claim. Consequently the net recovery of rubber is much higher. Enormous pressure is not used to obtain the results but the pressure used is applied scientifically and the material itself acts as a filter bed for all the water that is removed. The press fluffs up the rubber and consequently puts it in much better condition for rapid drying. This means that shorter drying time can be obtained which in turn means lower unit cost of operation.

The Firestone Tire & Rubber Co., Akron, after testing one of these presses for use in their reclaiming plant, ordered five more machines. The U.S. Rubber Reclaiming Co., the Philadelphia Rubber Works Co., the Hamilton Rubber Mfg. Co., and the Hood Rubber Co., also have recently placed orders for the Louisville Continuous Press.



The Louisville Continuous Press or Filter

HERMANN ROLL-UP TABLE ANNOUNCED TO INDUSTRY

W. H. Hermann, president of the Hermann Tire Building Machine Co., Lancaster, Ohio, recently announced to the rubber industry the perfection of the Hermann Roll-Up Table. The table is used for the assembly of fabric in tire building by either the Single Ply or Drum Method.

The following advantages are claimed for the table: No friction to pull and narrow the fabric as it passes into the roll; no re-rolling of liners; special devices provided to center and smooth the liners, relieving the operator of any watchfulness which means both speed and accuracy; proper assembly of material at highest speed and elimination of re-rolling the liners means money saved. It is claimed by the manufacturer that no other table on the market has these advantages.

The Hermann Roll-Up Table

The inventor of the table is a specialist in developing special devices for tire manufacturing machinery to reduce physical operations and labor costs. Mr. Hermann has for 20 years been interested in the development of machinery for the tire industry and for several years has manufactured the Hermann Single-Ply Machine for the construction of both high and low pressure cord tires.

Overland Prospercus

The Overland Trail Rubber Co., Omaha, Neb., closed the first half of the present year with total sales of tires and tubes of $1,012,854.36, and a net profit of $73,039.70.

During this six months period new machinery and equipment to the extent of $20,835.37 were added. The factory ran day and night nearly the entire time, manufacturing 149,180 tires and 11,690 tubes.

Monarch Business Good

According to officials of the Monarch Rubber Co., Hartville, Ohio, demand for the company's products is on the increase. From present indications the current production of 350 cord tires a day will be materially raised soon.

HARVEY SEES EXPANSION OF BUS TIRE INDUSTRY

The development of the bus industry took an impetus in 1925 that bids fair to make it an outstanding industry in the next five years, according to Lynn Harvey, divisional sales manager, India Tire & Rubber Co., Akron.

"From approximately 20,000 busses in operation in 1921, the total had grown to only 50,000 by the end of 1924," Mr. Harvey stated. "It is estimated that 1,000 buses a week are being added in 1925, so that this year's growth should equal that of the last five years.

"A total of almost 300,000 busses by 1930 has been forecast. Regulatory laws placing bus operation under State public utilities commissions have been passed in 32 states.

"The electric railway industry has accepted the bus as a feeder and as a supplementary service. More than 250 of the 821 lines are already using bus lines and others are being added to the list every day. Steam railroads are substituting bus lines for short lines.

"Starting with a make-shift truck chassis with a special body, bus operators generally have now adopted the all-bus design. Air-cushion seats, wide aisles, plate glass windows with silk hangings, wicker chair frames, smoking compartments and attractive exterior color schemes all have been added rapidly to meet the public demands for greater comfort and luxury.

"Tire construction, too, has been revolutionized by the development of the bus industry. Demand for greater riding comfort is rapidly replacing solid tires with air-cushion tires. Severe service requirements of busses have caused the development of new tire designs.

"So that, today, a number of tire companies have grown up whose development is knitted very closely with the development of the bus industry. Such companies, of which India Tire & Rubber Co. is one, have developed a bus tire that will give upwards of 20,000 miles of service under these very exacting conditions. Many of these companies are devoting a large part of their production to bus tires."

"Itsol" Registered

The I.T.S. Rubber Co., Ltd., London, England, recently registered the trade-mark "Itsol" in the U. S. Patent Office under Ser. No. 214,163. The trade-mark has been used on rubber heels, tips, soles and pads since March, 1924.

Wilson Breaks Record

According to F. J. Wilson, general manager, all production records of the Wilson Rubber Co., Canton, Ohio, were recently broken. The factory is now making use of every available square foot of its new four-story factory. The company, which deals with jobbers direct, has been operating day and night shifts for almost four years. Gloves, finger cots and drainage tubing are manufactured.

BRITISH INTRODUCE PUNCTURE INSURANCE

(Special to THE RUBBER AGE*)*

Insurance against tire punctures is the latest development of automobile insurance in Britain. An important insurance office has just announced that it is prepared to insure car owners against such mishaps. The cost is 6d (12 cents) for each £1 ($5.00) value of the tire. Thus a $25.00 tire would cost 60 cents to insure. The scheme only applies to new tires, and the policy covers a year from the time of purchase. If the tire bursts during this time the insured is entitled to a new one free.

This new development is made possible owing to the lasting qualities of the modern automobile tire. Tires in Britain now give an average of 14,000 miles service. An insurance company taking such a risk a few years ago would soon have been in the bankruptcy courts.

An arbitrary feature of the new scheme is that the company will only insure tires manufactured in Great Britain. However if the business proves profitable and competition arises, this bar will almost certainly be swept away.

Swinehart Raises Prices

Due to the increased cost of crude rubber, President Thomas F. Walsh of the Swinehart Tire & Rubber Co., Akron, announced an increase of 10 per cent on all Swinehart cushion, solid and pneumatic tires and inner tubes, effective Oct. 1.

CABARRUS COTTON MILLS

M. L. CANNON
PRESIDENT & TREASURER

KANNAPOLIS, N. C.

Superior Quality Tire Fabrics

EGYPTIAN-PEELER
KARDED & COMBED
CORD & SQUARE WOVEN

CANNON MILLS, Inc.
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A. W. REID
Representative

PHARIS USES LOCOMOTIVE IN EMERGENCY FOR STEAM

The unexpected failure of one of the big boilers of The Pharis Tire & Rubber Co. at their Newark, Ohio, factory proved to be no handicap to the heavy production program of this company during the long period necessarily required to replace the disabled boiler. By a unique display of resourcefulness on the part of the management of this company, a railway locomotive was secured and promptly connected to the steam mains of the factory so that its output was continued at the maximum point without interruption or curtailment.

According to the management, the breakdown occurred while the Pharis company was at its peak production with many thousands of tires on unfilled orders. The boiler failure would have curtailed their output several hundred tires daily which would have meant a heavy loss.

It is believed that this is the first instance where a locomotive has been adapted to tire manufacturing and it speaks highly for the energy of this very successful company in thus stepping over such an unusual obstacle.

The Pharis company has started the erection of a new building, 60 x 200, to be two stories high and upon the completion of this building their output will be 3500 tires per day and 3500 inner tubes. It is stated by the management that the building will be completed, ready for occupancy within six weeks.

How the Pharis Tire & Rubber Co. Supplied a Deficiency of Steam at their Newark, Ohio, Factory by Using a Railroad Locomotive

Malayan Exports Increase

More attention than usual is naturally being directed to the statistics of exports from British Malaya, in view of the expected expansion in shipments consequent upon the increase in the quota and the release of uncouponed rubber recently sanctioned. Total exports for August amounted to 27,753 tons, in comparison with 24,809 tons in the preceding month, but were less than those for June.

During the earlier months of the year, re-exports, which consist chiefly of rubber received from the Dutch colonies, were on more than one occasion in excess of shipments of purely Malayan rubber. In the latest statement, however,. the balance is in favor of shipments from the principal restricting area, to total of 27,753 tons including only 12,025 tons from outside sources, of which no less than 10,174 tons were declared as wet rubber. Higher totals are said to be probable later on, when the extra quantities available as a result of the changes in assesssment come forward.

This should serve still further to lessen the difference between exports of Malayan rubber and transhipments, it is said. So far this year total exports show an increase of 29,533 tons, as compared with the first eight months of 1924, which is entirely the outcome of larger quantities for re-export, shipments of Malayan-grown rubber actually being less by 4,989 tons over the period.

Demand in the Orient is shown to have been well maintained, but the excess of exports as compared with the previous month makes for a larger balance to be shipped to Britain, and heavier arrivals in London are consequently indicated during the coming weeks.

Gla-Morgan to Reopen

It was recently announced that the Gla-Morgan Rubber Co., Oak Hill, Ohio, has been taken over by a reorganized company and that operations will shortly be resumed in the factory. The Gla-Morgan company was organized four years ago and for a brief period manufactured tires. The factory has been idle since operations were suspended. Charles T. Fleming, formerly with the Featheredge Rubber Co., Chicago, will be factory manager.

Giant to Build Addition

The business of the Giant Tire & Rubber Co., Findlay, Ohio, has grown to such an extent in the last nine months, according to C. E. Hart, president, that the company plans to build an additional unit 200 x 80 ft. The new factory will be of fireproof construction and when completed will increase the capacity of Giant at least 30 per cent.

STOCKS

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Akron
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Cleveland
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Use More Zinc Oxide
Be Sure It Bears This Label

AZO ZINC OXIDES

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STOCKS

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Chicago
Louisville
San Francisco
Los Angeles
New Orleans

GENERAL SEES NO DROP IN THE PRICE OF TIRES

Without analyzing the situation, car owners in many sections of the country have drawn the false and illogical conclusion that prices must drop, says the General Tire & Rubber Co., Akron. The falsity of this reasoning lies in the fact that when the last raise was made effective July 18th, crude rubber for immediate delivery was quoted at $1.20 per pound and for delivery from October to December 98 cents per pound.

Prices Based on 55 Cent Rubber

It can be seen how this opinion was formed when we consider that there are those who believe tire prices should be based on current market quotations rather than on actual cost of rubber going into the tires. Notwithstanding this opinion, prices have always been and still are figured at the cost of rubber actually going into the tires. Present tire prices are based on approximately 55 cents per pound but rubber for delivery during the period October to December has not been quoted as low as 55 cents since June 15th or over a month previous to the time tires were priced on that basis. Rubber for immediate delivery has not been as low as 55 cents since the middle of May. Rubber for October—December delivery on September 19th was quoted at 80 cents without much hope of relief.

Manufacturers did not think it necessary to set their prices for tires higher than on the basis of 55 cent rubber because most of them were fairly well covered around this figure and they believed that the highly inflated crude market would break. They felt that an increase in London stocks of crude rubber and curtailment of tire production would bring this about. In fact, they were so thoroughly convinced of this that while rubber was being quoted between 80 cents and $1.20 no purchasing whatever was done by manufacturers. It was limited only to speculators who were largely responsible for the high market at those figures.

Conditions now do not bear out the fullest expectations of manufacturers. The general feeling that August would show a large curtailment in the manufacture of rubber goods was disproved when the August consumption figures were published. London stocks of crude rubber, instead of increasing as was predicted, showed very sharp decreases.

Advise Regular Buying

The General Tire & Rubber Co. has always followed a policy of advising against speculation and they have shown in their history the soundness of maintaining this policy. They have never advised their dealers to load up with heavy stocks nor have they advised their dealers to load up their commercial accounts. However, under the present conditions General is advising commercial accounts to keep up regular purchases for current requirements.

SOLID FIBRE
SHIPPING CASES

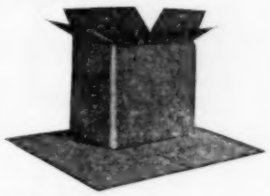
The MODERN and SATISFACTORY method for PACKING and SHIPPING.

Shipments can be made in units up to 90 lbs.

INEXPENSIVE STRONG
SPACE SAVING
PILFER PROOF
WATER PROOF DURABLE

We operate a department for SMALL, RUSH & SPECIAL ORDERS

Send in your inquiries. We shall be pleased to submit samples and quote prices.



Brooklyn Fibre Syndicate, Inc.
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Foxcroft 3800

Est. 1900 Inc. 1919

THE KUHLKE MACHINE CO.
Formerly Jones & Kuhlke

AUTOMOBILE TIRE MOLDS and CORES

GENERAL MACHINE WORK

Akron, Ohio

FACTORY BUILDINGS FOR SALE

¶ One story, 16 foot height, concrete, tile and steel construction; 10,000 square feet, new, four acres, railroad siding, all utilities at New Brunswick.

¶ One story brick, steel, fireproof, sprinkled, concrete floors, 30,000 square feet, two acres of ground, railroad siding, 250 horse power boilers, electrical equipment at New Brunswick.

JAMES A. O'CONNELL
392 George St., New Brunswick, N. J.

TURN SPARE HOURS INTO DOLLARS

A VERY EASY, DIGNIFIED AND PLEASANT WAY TO

ADD ONE HUNDRED DOLLARS
A Month to Your Income

Let us tell you of our plan that enables thousands of young men and women to turn their spare time into cash—without experience or capital and without interfering with their regular duties.

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50 Broad St., New York, N. Y.

Without obligation to me please send details of your money making plan.

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ANNOUNCEMENT

The great success of the Akron Standard double cavity, rapid, Watch Case Vulcanizer for the smaller tire sizes created a large demand that its unequaled advantages be made available for the bigger sizes.

This has now been fully accomplished.

Illustrations and description will be published at an early date.

Write for detailed information.

The Akron Standard Mold Co.

Akron "The Established Measure of Value" **Ohio**

MUELLER TO DIRECT ALL PRODUCTION FOR KELLY

It was recently announced that Louis Mueller, who had been plant manager at Akron, will go to Cumberland, Md., in connection with the closing down of the Akron factory of the Kelly-Springfield Tire Co., New York, and the concentration of all production in Cumberland. Mr. Mueller, who will supervise the entire output, succeeds Thomas C. Marshall, vice president, who had been factory manager at Cumberland. Mr. Marshall will go to the executive offices in New York. The number of employees in the Cumberland factory, which has been as many as 3,100 at times, will be greatly increased.

Sun Building Additions

The Sun Rubber Co., established in Barberton, Ohio, less than three years ago now is rated second to the Seiberling Rubber Company in the rubber industries of that city and two additions are now being built on the factory so that its present production may be doubled. The payroll now amounts to $13,000 a month and the number of employees soon will be increased to 150 men and women.

The Sun Rubber Co. manufactures De Luxe chair cushions, drug sundries and many types of molded goods.

J. T. McLane of McKeesport, Pa., is president of the company. T. W. Smith is vice president and Melvin S. Lower is secretary and general manager. E. B. Billick is treasurer and Harry Baughman is factory superintendent. These men are directors, together with F. S. Hughes, D. E. Wylie of Elizabeth, Pa., and F. J. Good of Pittsburgh, Pa.

Gostlin Joins Mohawk

Frederick J. Gostlin, who has been in the rubber industry since 1888, recently joined the Mohawk Rubber Co., Akron, as assistant factory superintendent.

Washing Mill Patented

Philip E. Young, Fair Haven, Mass., inventor of a mill for washing rubber, was recently granted U. S. Patent No. 1,556,142 on the machine which consists of two pairs of rolls through which a sheet of rubber passes successively. The second pair of rolls is adapted to pull the sheet more rapidly than the first pair feeds it, so that the rubber will be placed under tension between the pairs of rolls. Means are provided for spraying water on the sheet as it emerges from between the first pair of rolls and means are also provided for deflecting the flow of the wash water toward the ends of the second pair of rolls to prevent dislodged dirt from being ground back into the sheet.

RUBBER SAVES THE DAY

When the subway in New York was flooded recently by a broken water main, the rubber suction hose used by city departments did much to help it resume operation.

Pontius Quits Miller

Parke Pontius was presented with a handsome white gold watch and chain by his associates at the Miller Rubber Co., Akron, Oct. 3, upon the occasion of his resignation as manager of the eastern sales division which position he has held for the last six years.

Mr. Pontius is succeeded by Lloyd L. Black, who has been his assistant. He left Monday for Florida where he intends to go into business for himself. He had been in the rubber industry since 1908, having been with Goodyear and Firestone before going to Miller.

Russian Factories Closed

The large rubber factories in Riga, Russia, according to a report of the Department of Commerce, remain closed, due to the lack of demand and the reluctance of foreign capital to invest. Little has been accomplished in the past year toward regaining Riga's pre-war prestige in the rubber industry. The former Russian market appears unlikely to reopen.

Norwalk Sales Excellent

According to Alexander S. Banks, vice president, business and profits of the Norwalk Tire & Rubber Co., Norwalk, Conn., have been phenomenal this year. Mr. Banks declared that the company had started the year with a production program of $3,000,000 worth of tires, but sales up to September 30 will be approximately $3,400,000. Profits for July and August were $93,000 net after depreciation, interest and all other charges. Earnings for September ran at about the same rate and profits for nine months ended September 30 will be approximately $350,000.

Increases Capacity

The Philadelphia Rubber Works Co., Akron, has made extensive changes at its plant within the past few months to keep pace with the growing demand for reclaimed rubber. A new building which will house offices and laboratories and a building for grinding operations have just been completed. Mills, strainers and new refiners have already been installed. J. W. Lowman, first vice president, is in charge of production.

Register "All-Pro"

The Lambertville Rubber Co., Lambertville, N. J., recently registered in the U. S. Patent Office the trade-mark "All-Pro" under Ser. No. 218,064. The name has been used since last July for shoes having uppers of leather and soles of rubber.

The CARTER BELL MFG CO

CARTER BELL STANDARD SINCE 1898 RUBBER SUBSTITUTES

150 Nassau Street New York

EMBOSSING CALENDERS

For Artificial Leather, Oil Cloth, Carriage and Automobile Covers

DRYING MACHINES

with Copper or tinned iron Cylinders for Cotton Ducks, Drills and Sheetings

The Textile-Finishing Machinery Co.

OFFICE, No. 83 EXCHANGE PLACE

PROVIDENCE, R. I.

MARATHON PLANS LARGE INCREASE IN PRODUCTION

According to C. C. Osmun, president of the Marathon Rubber Co., Akron, the company contemplates the immediate installation of additional machinery which will raise its capacity to 25,000 tires a month. Present production is about 15,000 tires a month.

"When the factory started up a year ago under the new organization," Mr. Osmun said, "we began production at capacity. Since that time we have been constantly behind in orders and the drain upon our facilities has been so great as to demand additional machinery."

The new equipment will cost approximately $75,000, it is reported. The company plans to begin production shortly of a heavy duty cord for exceptionally hard service.

Essex Registers "Bumper"

The Essex Rubber Co., Inc., Trenton, N. J., recently registered the trade-mark "Bumper" in the U. S. Patent Office under Ser. No. 218,543. The trade-mark has ben used on rubber heels since last July.

Victor Stock Off Exchange

Maintaining that both the common and preferred stock of the Victor Rubber Co., Springfield, Ohio, are absolutely worthless, governors of the Cleveland Stock Exchange recently ordered the stock removed from the board. The company is in process of liquidation and indications have been that there would be nothing left for the common stockholders, although it was believed that the preferred stock had some value.

Speaks Leaves Firestone

Charles E. Speaks, manager of truck tire sales for the Firestone Tire & Rubber Co., Akron, has resigned and intends to spend several months in Europe. Mr. Speaks has been with the company for 14 years. He will be succeeded by G. M. Kryder.

Bead Apparatus Patented

Harold A. Denmire, inventor of an apparatus for making tire beads recently granted U. S. Patent No. 1,553,514, has assigned the patent to the General Tire & Rubber Co., Akron. The apparatus comprises a plurality of reels for containing strips of material, a form upon which the strips are wound into superposed convolutions, means operable to compress the convolutions both laterally and radially during rotation of the form. It also comprises means for guiding and centering each strip relative to the form, means to automatically sever one of the strips after a single convolution has been wound, means for rotating the form, a clutch mechanism associated with the rotating means, and means operable in conjunction with the clutch mechanism for effecting a variable braking effect upon each of the reels.

RIMS APPROVED BY THE TIRE & RIM ASSOCIATION

Size	Sept. 1925 Number	Pct.	Sept. 1924 Number	Pct.	9 mos. 1925 Number	Pct.
24x3	1,651	0.1	....	..	10,536	0.1
26x3	7,596	0.4	7,555	0.4	73,466	0.4
28x3	537	0.0	....	..	2,581	0.0
30x3	....	..	75,203	4.2	197,441	1.0
30x3½	350,103	17.4	788,616	44.4	3,721,104	19.0
31x4 S.S.	10,944	0.5	66,463	3.8	564,191	2.9
25x3½	....	..	....	..	460	0.0
27x3½	706	0.0	432	0.0	2,372	0.0
28x3½	541,467	24.9	39,439	2.2	5,953,786	30.3
29x3½	....	..	18,431	1.1	144,390	0.7
30x3½	31,395	1.6	194,747	10.9	539,156	2.2
32x3½	1,106	0.1	6,094	0.3	20,729	0.1
28x4	288,381	14.3	105,505	5.5	2,398,346	12.2
29x4	181,587	9.0	43,986	2.6	1,245,927	6.3
30x4	....	..	55,294	3.1	287,464	1.5
31x4	....	..	868	0.0	1,515	0.0
32x4	27,824	0.4	54,235	3.0	232,638	1.2
33x4	4,779	0.2	4,478	0.3	18,162	0.1
34x4	....	..	....	..	503	0.0
29x4½	44,356	2.2	21,880	1.2	404,705	2.1
30x4½	223,738	11.1	71,652	4.2	1,254,592	6.4
31x4½	5,406	0.3	29,754	1.7	245,976	1.3
32x4½	73,797	3.7	92,876	5.2	501,405	2.6
33x4½	602	0.0	217	0.0	1,854	0.0
34x4½	3,409	0.2	14,831	0.8	83,311	0.4
36x4½	....	..	20	0.0	154	0.0
30x5	32,162	1.6	35,856	2.2	294,340	1.1
31x5	51,243	2.5	31,289	1.8	397,198	2.0
33x6	17,993	0.6	56	0.0	58,585	0.3
Truck 30x5	122,169	6.1	(See Note)		681,302	3.5
34x5	8,519	0.4	8,916	0.5	86,133	0.4
32x6	16,631	0.8	5,832	0.3	115,386	0.6
36x6	8,986	0.4	4,830	0.3	53,636	0.3
34x7	3,886	0.2	499	0.0	20,493	0.1
38x7	815	0.0	548	0.0	7,211	0.0
36x8	721	0.0	354	0.0	9,227	0.0
40x8	1,766	0.0	255	0.0	10,582	0.1
40x10	....	..	....	..	606	0.0
44x10	....	..	....	..	571	0.0
	2,064,275		1,781,011		19,641,984	
Motorcycle		0.5		0.4		0.5
Clincher		17.9		52.4		22.9
Balloon		66.5		25.6		64.2
Regular S.S.		7.2		20.5		7.4
Truck 20"		7.1		0.3		4.3
Truck 24"		0.8		0.8		0.7

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Tendencies in Rubber Compounding

An Abstract of a Paper Read by W. B. Weigand Before the Institution of the Rubber Industry

A PAPER of much interest on "Some Tendencies in Rubber Compounding" was read by W. B. Weigand at the opening meeting of the Institution of the Rubber Industry held in London on Sept. 14. This paper aroused considerable interest in Great Britain and will be published in full in the transactions of the Institution. Shortly after reading the paper, Mr. Weigand was elected to a fellowship in the Institution, which is the official body representing the technical and educational activities of the British rubber industry.

Dr. Weigand named economy as the prime motive force behind present-day compounding. His illustrations included economy in physical testing and compound records through standardization; economy in milling through the use of lower-grade rubbers; the use of emollients to reduce power charges, etc.

Economy in reinforcement might, he said, be defined in terms of capacity for work or proof resilience per unit of volume cost, this being the explanation of the increased use of gas black, with lamp black coming next in order.

Milling and Curing

Elimination of breaking down factors brought up questions of milling and curing. Under the former latex compounding was discussed with reference to the work of Mr. Hopkinson and Dr. Schidrowitz. The potentialities of latex compounding, because of elimination of milling, coupled with improved dispersion, were emphasized.

The breaking down effect of the cure raised the question of accelerators, which was discussed from the point of view of American practice involving the proper use of high versus low temperature accelerators and the combination of accelerators in a manner calculated to reduce the cost of acceleration, at the same time improving the cure in thick objects, such as solid tires. Leading accelerators were referred to in detail, including novel effects obtainable through ultra-accelerators.

In a discussion of the specialized problem of rubber footwear compounding the above principles were applied in detail, mention being made of the various types of pressure curing and the modern trend toward adopting the methods of high quality tire compounding involving the use of reinforcing pigments. A plea was made for less secrecy in respect of footwear compounding and technology generally.

The importance of proper balance in tire compounding was illustrated in terms of proper use of pigments and accelerators. The free use of mineral rubber, reduced sulphur ratios, bloom versus "beauty," proper combination of accelerators, were points discussed.

Solid tire compounding and tendencies in mechanical compounding were briefly referred to.

The Problem of Reinforcement

A "close-up" of reinforcement was the next topic discussed under the headings of measurement and mechanism. Under the former an analysis was made of the proof resilience criterion as an index to general excellence. Modulus of rigidity was described as a corrective factor necessary to predict resistance to abrasive wear and a new theory was advanced to explain the role played by modulus in resistance to abrasion. Reference was made to Hooke's law advantages and its measurement through the "concavity factor."

Under the heading of mechanism of reinforcement reference was made to the importance of Dr. Spear's theory of rigid films, the limitations of which lead to the suggestion that reinforcement may perhaps be more clearly understood in terms of anchorage, continuity and uniformity of stress. These three conditions were illustrated in detail.

The more complete assessment of pigment reinforcing power was described in terms of the "A" function and the Delta "A" function, these being the double integrals of tensile strength with respect to elongation and concentration of pigment phase.

These criteria were applied in detail to the study of the properties of various commonly used ingredients.

It was shown that through the use of ultra-fine pigments the range of useful loadings is greatly extended. Theoretical limits of pigmentation were defined in terms of tetrahedral pilings.

Importance of High Volume Compounding

The practical importance of high volume compounding was pointed out as making possible the production of a whole new series of rubber mixings which bridge the gap between soft and hard rubber; in other words, the attainment of high rigidity without sacrificing tensile strength and extensibility.

The industrial applications of this new set of compounds were briefly described.

The further extension of these principles demanded, said Mr. Weigand, the more intensive study of emollients from the point of view of securing, through their influence upon interfacial tensions, of complete wetting of each particle so as to postpone the agglomeration, which results in collapse of reinforcement.

Reduction in hysteresis losses was referred to as another advantage accruing from more perfect wetting.

It was pointed out that linear stress affords an inadequate index to conditions in actual service. The effect upon the stress-strain curves of imposing balanced strains in two directions simultaneously was demonstrated mathematically and confirmed experimentally. The industrial importance of this type of reinforcement was adumbrated.

Joule Effect Discussed

The Joule effect was discussed from the thermo-dynamical point of view, emphasizing the essential analogy between the reversible thermal effects in rubber and those in gases. Carnot's cycle applied to rubber led to the prediction that it ought to be possible to convert heat into useful work through the use of vulcanized rubber as the thermal medium.

This prediction was verified by showing two examples of rubber heat engines, one rotary and the other reciprocating. The important conclusion thereby reached is that the phenomena of the Joule effect may be approached from the angle of practical engineering.

It was suggested that thermodynamical experimentation along these lines might afford a more rapid means of elucidating the structural problems than the hypothetical speculations which have thus far pre-empted the literature of the Joule effect.

The paper concluded by an attempt to predict the result of modern compounding tendencies. By the full employment of accelerators, latex compoundings and the proper dispersion, in higher volume loadings, of ultra-fine pigments, energy storage capacity of rubber would reach a point where it would replace steel as a storehouse of mechanical energy. It might even displace the electric storage battery, making possible the application of rubber springs to clocks, gramophones, bicycles, automobiles, submarines, or, in general, wherever it is desired to "warehouse" energy. The mobility, cleanliness and safety of such an energy storage plant was pointed out.

It was predicted that through the use of high volume pigmentation, with resultant increase in rigidity, combined with infrangibilty, rubber will displace a great many existing rigid structural materials from the arts. Endowed with a proof resilience three hundred times greater than that of tempered steel, such rubber compounds open a whole new vista of structural engineering.

Rubber Used in Mammoth Models

A Rubber Composition Forms the Hides of Lifelike Models of Prehistoric Monsters Shown at Toronto

By **Francis A. Emmons**
Advertising Manager, Foote Bros. Gear & Machine Co.

THE feelings and emotions experienced by the adventurers in H. G. Wells "Lost World" upon confronting some of the fearsome prehistoric monsters that roamed that unknown plateau in South America, can be duplicated by anyone who inadvertently opens a certain door in the factory of Messmore & Damon in New York City.

The eyes of the visitor would be literally stunned by the sight of two gigantic hairy mammoths nearly 30 ft. long and 16 ft. high with rolling eyes, heaving sides, tails switching, body swaying, heads moving angrily from side to side, ears flapping and trunk outstretched for the intended victim.

Of course the "Mammoths" are only mechanically operated reproductions of the original animal, for the last living member of the species vanished from the face of the earth some 50,000 years ago, but the effect is wonderfully realistic and gives an excellent idea of how the huge, hairy cousins of the present day elephant must have appeared to the startled eyes of the stone age man of long ago.

Used for Advertising and Theatrical Work

The firm of Messmore and Damon are specialists in mechanical animals and human figures, which are in great demand for advertising purposes by large department stores, motion picture concerns and the better known theatrical managers. In their specially equipped shop they produce anything from a manikin to a huge dinosaur or mechanical mastodon. The various mechanical movements are produced by the use of small high speed electric motors and compact speed reducing units as described later in this article.

The two mammoths illustrated on this page are the most recent additions to the family and it is a foregone conclusion

On the left is shown the IXL Spur Gear Speed Reducer. The other is the Worm Gear Reducer.

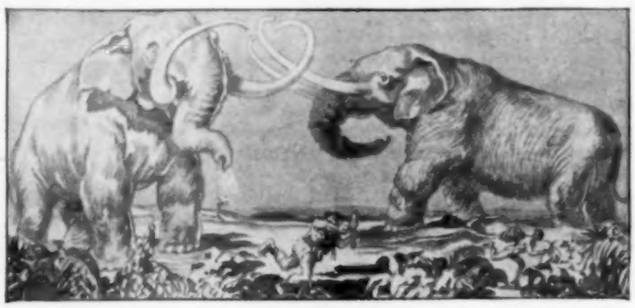
that they will attract a great deal of attention wherever they are exhibited. They were shown for the first time at the Canadian National Exhibit in Toronto, Ontario, the early part of September.

The models were made after restored fossil skeletons at the American Museum of Natural History in New York and the Museum of History, Science and Art at Los Angeles, Calif. The fossillized skeletons alone weigh about thirty tons each which is estimated to be about the weight of a mammoth of average size, the bones themselves having gained considerable weight in the process of becoming fossilized.

Scientists tell us that the mammoth lived a great deal in cold climates, which may account for the hairy, shaggy coat, not found on the present day elephant.

They had massive tusks ten to twelve feet in length, curving upward with the points in some instances higher than the level of the head. For food they consumed an average of about 700 lb. of leaves, twigs, grass and other vegetation each day.

As to why the mammoth became extinct, it is only possible to conjecture or theorize. No authentic information is avail-



The Two Most Recent Mammoth Models

able on the subject. Among the theories advanced to account for their extermination, some are more ingenious than plausible. Perhaps they perished of starvation as the vegetation of the earth died off from the advancing waves of cold preceding the glacial period. They may have been overtaken by floods on their supposed migrations or fallen through ice floes into the sea.

The theory advanced by Mr. Neuville is quite ingenious and sounds plausible. He holds that their extinction was due to a lack of oil glands in the skin, a characteristic shared by the modern elephant, with the result that there was no oily secretion to repel water. Consequently when exposed to rain or melting snow the wool became water soaked and oftimes frozen so that the Mammoth perished from cold as the winters became longer and more severe.

This theory however does not account for the disappearance of such southern species as the Imperial and Columbian mammoth which inhabited lands near the equator but who have also disappeared from the face of the earth.

Models are Accurate Reproductions

The models made by Messmore & Damon are accurate reproductions of the original mammoth, the measurements being taken from the skeletons before named and the bodies moulded from information contributed by scientific authorities.

The length of the restored mammoths is 28 ft., height, 16 ft. at the shoulders, total weight three tons. The framework of the body is made of rattan put together by springs so that it is flexible.

The hide or skin is made of heavy quilting with a rubber composition worked over it so that it folds in a natural manner when the various parts are moved.

IXL Speed Reducers Used

The head and feet are made of papier-mache. Sixteen electric motors and IXL Speed Reducers are used within the body convenient to and connected by means of more or less complicated driving mechanisms to the part to be moved.

The eyes, ears, head, neck, trunk, stomach, sides and tail all move in a predetermined sequence, some of the parts having several separate and distinct motions.

In addition to these movements a swaying motion is provided so the entire animal can be made to sway in a manner similar to that observed on a captive elephant while feeding.

All the motions are controlled from one switchboard and can be reversed if desired.

The various mechanical movements given to the models and which contribute so greatly to the lifelike, realistic appearance are produced through the use of motors and Foote IXL Speed Reducers located within the figures. The motions of the different parts must be exactly timed to produce the lifelike effect and it is evident that some of the motions must be much slower than others.

It is only through the use of compact, enclosed, self-lubricating reduction units such as the IXL Spur and Worm Gear Reducers that the desired mechanical effects can be produced within the limited space available.

The cuts herewith show the construction of the Foote Bros. IXL Spur and Worm Reducers used by Messmore & Damon in the Mechanical mammoths as well as their other interesting mechanical figures.

Description of Reduction Units

The IXL Spur Gear Reducer on Page 53 is a simple, compact and self-contained unit, consisting of trains of spur and internal gears as shown in the illustration. The power is delivered to a pinion at the high speed and which revolves between three idler gears rigidly journalled to parts of the frame. These idlers in turn drive a large internal gear. The slow speed pinion is keyed to the high speed internal gear and in turn drives another set of idler gears. The two shafts revolve in the same direction and are concentric, direction of rotation may be reversed if desired. It is apparent that it is possible to secure with these units almost any reduction ratio by simply increasing the number of gear trains and varying the ratio of the pinions and gears.

The IXL Worm Gear Speed Reducer is built upon the well known worm and worm gear principle, the worm being provided with ball thrust bearings to take up end thrusts and all moving parts moving in an oil bath within an enclosed cast iron housing.

Reduction ratios of any desired range are easily secured through the use of the IXL Spur and Worm Gear Speed Reducers or combination of the two. Sizes range from those of fractional horsepower capacity such as used with the mechanical mammoths up to 150 hp., for heavy-duty industrial work such as found necessary in rubber factories.

ABSTRACTS

Vulcanization Accelerator

British Patent No. 229,253

An arylaminothiazole is employed as an accelerator of vulcanization. As an example, 100 parts of rubber, 8 parts of sulphur, 10 parts of zinc oxide and one part of anilinobenzothiazole is vulcanized within a period of 40 minutes at a temperature of 144 degrees C. Homologues containing lateral groups in the benzene nucleus or in the benzothioazole may also be employed. These substances may be obtained by the action of oxidizing agents such as bromine or chlorine on substituted thioureas.

Turpentine Substitute from Rubber

French Patent No. 579,171

In the above patent there is described a process for the manufacture of an oil by the distillation of vulcanized rubber, which oil finds use as a substitute for turpentine. The oil is obtained by the dry distillation of pieces of vulcanized rubber and is then distilled either at the ordinary pressure or under a vacuum in the presence of a mineral acid, such as sulphuric, phosphoric, metaphosphoric or boric. The distillate is then treated with a solution of a hypochlorite or of sodium bisulphite and thereafter with a solution of sodium hydroxide. The substance then obtained is washed with water and then after the water has been separated, it is filtered over clay. The slightly yellow colored and pleasant smelling oil manufactured in this manner possesses certain properties which are common to turpentine. The distillation of the vulcanized rubber scrap employed in this process can be carried out with the addition of alkalies or alkaline earth salts with constant stirring.

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Rubber Plantations in Mindanao

Proof that Rubber May be Profitably Grown in the Philippines is Supplied by Six Plantations

By Walter Robb
Secretary, American Chamber of Commerce
of the Philippine Islands

THE best proof that rubber can be profitably grown in the Philippines is that it is already being done. There are three successful plantations in Mindanao, two on Basilan island, adjacent to Zamboanga, and one in Cotabato with Saragani as a shipping point. The Chamber of Commerce believes that Congress should (if the Philippine government will not) take whatever steps may be necessary to stimulate this pioneer movement by infusion of whatever millions Americans and Filipinos may wish to venture, until the entire rubber supply of the United States is a domestic product. The American Chamber of Commerce of the Philippine Islands holds that no trade is so advantageous as domestic trade. It knows that if right now the American supply of crude rubber were coming from this territory, as it should be, practically the payment would be in manufactures from the homeland.

Balances of trade between the Philippines and the United States, though they may be in favor of the islands on the face of customs figures, are nominal rather than actual; it is precisely the same as trade between states of the Union, and this is not true of trade between the United States and any foreign country. To buy rubber in Singapore it is necessary to set up a sterling credit in London, for example, and this year the credit must be the equivalent of $400,000,000 as against $75,000,000 last year. What London, obtaining exchange margins, insurance and freight and other incidental profits, actually buys with this huge credit will not be extensively our manufactures. It will be our raw and semi-manufactured products, into which the least possible labor has been wrought.

On the part of the United States, this is poor trading; but England is wise and does very well in the deal. It should be obvious to everyone that exchange of manufactures for a prime necessity of the sixth industry of a country, six being the rank of the automobile industry in the United States, would be much more profitable than to give raw products for it. And it would be better all around, better for farmers, for manufacturers, for bankers, and insurance men, for railway and steamship lines and for merchants. With such fundamentals the Chamber of Commerce supports its view that American rubber should be grown upon American soil.

The Basilan Plantation Co.

The oldest rubber plantation in the Philippines was started fifteen years ago through the enterprise of an American, Dr. J. W. Strong. The incorporation papers are dated August 12, 1910. The company is the Basilan Plantation Co., J. M. Menzi of Menzi & Co., being the chief stockholder. As indicated by the name, the plantation is on Basilan island. This island is 482 square miles in area, much larger than commonly supposed. A goodly portion of the rubber required in the United States can be grown on this island alone, where the trees flourish exceedingly well; and on the immense wastes of Cotabato the extensive plantations to supply the entire American demand for rubber would appear as an acre-size orchard on a great western farm.

The area of Basilan plantation is the maximum allowed under the public land act, 2500 acres. There is room on Basilan island for 120 such plantations.

The anticipated yield of crude rubber from the plantation this year is 75,000 kilos, 165,000 pounds or 75 metric tons. Only half of the plantation is in rubber, a portion of the trees not yet in full bearing. In 1923 the yield was 26,629 kilos, in 1924 it was 52,375 kilos, and during the first five months of this year it was 28,423 kilos. In June 12,000 pounds, dry and ready for export, were obtained; and very shortly the management expects a monthly yield of 20,000 pounds. The product is shipped by way of Zamboanga to Singapore, where it is sold through a broker on the "Singapore auction." The latest batch shipped brought P1.55 a pound.

Small plantations have difficulties to which large ones are not subject. This plantation formerly endeavored to market its product through Menzi's New York office, but the shipments kicked about in the metropolitan market until finally a sharper's price had to be taken. With larger shipments deals could readily have been closed by cable before the rubber left the plantation, or even while it was still in the tree. Since its unfortunate experience in New York the company prefers Singapore.

The total Philippine yield of rubber last year was 97,905 kilos, the invoice price being 55,128. As the shipments are consignments to agents, the invoice price is more or less nominal—an estimate from previous returns. Deducting the 52,375 kilos shipped by the Basilan Plantation Co., the difference or 45,635 kilos must have come from the plantation, on the same island, of the American Rubber Co., the company with which Dr. Strong is now associated as manager. The plantation in Cotabato is owned by Thomas J. Wolff, an active member of the Chamber of Commerce. From it a considerable yield is expected this year.

San Francisco capital is behind the American Rubber Co.

Experiences of One Company

Menzi & Company have been very courteous in furnishing data for this paper. Referring to their early records, they found that clearing 200 acres of new land, planting it to rubber and keeping it cultivated until the trees were of yielding age, cost $18,000. This was during a period of seven years but of course the main portion of expense is in clearing and planting. To keep the jungle down between the rows of growing trees is not expensive. Director Arthur F. Fischer of the Bureau of Forestry has figured costs to the yielding stage in another way. He fixes them at 15 cents a pound of crude rubber, and says they are the lowest in the world.

The Basilan Plantation Co. employs Moros and finds their work satisfactory. Tappers get 54 cents a day, handling 500 trees per man and collecting an average of 8½ pounds of latex daily. The men also get a bonus when it is earned. Their wages are higher than the pay of coolies in Sumatra or the Federated Malay States, perhaps, but it is altogether possible that a difference in efficiency in favor of the Moro will in time offset the higher pay he receives. Besides, labor cost is not the only factor in production costs.

Americans have always been eminently successful in dealing with Philippine labor. No industry has languished because of labor, either its cost, its quality or its quantity. (If there be an exception to this general rule, it is coal mining—a far cry from farming, to which Filipinos are inured by tradition and custom.)

The Basilan Plantation Co. believes it has a particular asset in its coconut plantings and its cattle herds. This is true. It is a decided advantage, for it offers three sources of income from the same project. The cattle and coconut will tide over periods of low prices.

Rubber plantations in all the southern Philippines are bound to be successful if diversified with coconuts and cattle, or possibly Manila hemp besides. Beef is always in demand

locally, herds of cattle also aid in keeping down the jungle. As to coconuts and hemp, the world wants all it can get of them every year. On a plantation rationally diversified in the Philippines, rubber need not be tapped when it does not pay to do so. No Stevenson restriction act is needed as a fiscal regulation of the market.

If Moro labor is ever insufficient, additional labor may be obtained from Cebu, an island not far distant, with a population of 200 to the square mile, where labor is now regularly and readily recruited for Hawaii. It is dependable labor.

An analogous benefit aside from the increase of agricultural wealth would accrue to the Philippines from the planting of rubber over big holdings in Mindanao. The process would be in reality a reforestation of waste land. Bands of nomadic tribes roam over these lands. From time to time they camp at one spot long enough to produce a crop of rice or corn or yams. Their methods are to burn off the scrub, which often sets fire to the pampas, and stick the seed into the burned-over loam. The ashes form a mulch to keep weeds and wild growth down until harvest. After harvest the band moves on to other fields, leaving the ruined forest behind them. The bare land is exposed to the tropical rains and the annual losses from erosion are enormous.

The valleys suffer from the flood waters pouring down the hills without interruption.

The director of forestry has long been aware of this unsatisfactory situation. To remedy it he has proposed (and bills are before the legislature to effect this) that the government lease large tracts of this land to companies who would undertake to plant groves of rubber and camphor trees and fields of pineapples. A member of the legislature has introduced a bill that would grant tracts to the University of the Philippines, for it to lease for terms of 99 years. Another bill would have the government deal directly with the lessees, fixing the term at 25 years with privilege of renewal for a like period.

Neither of these bills seems likely to pass. If one does, it may be the university bill. The university receives at present only P1,500,000 annually from the government, and this by annual appropriation. It needs more than twice that sum and has no other source of income.

It seems therefore in the light of ample experience that action will of necessity come from Congress if Americans and Filipinos are to have the same opportunities in growing rubber that Britishers, Chinese and the native inhabitants enjoy in the British tropics. The United States has no colonial office, and the watchful care of such a liaison between producer and the government may not be necessary; but Federal cognizance of the situation to the extent of granting the use of the waste lands seems absolutely essential.

Combustion System Proves Profitable

Saves $1,980 Annually by Reducing Fuel Consumption Four Per Cent and Eliminating $900 in Brick Repairs

By C. H. Lowe
Chief Engineer, Mechanical Rubber Co., Cleveland, Ohio

At this plant we operate seven Stirling boilers of 500 hp. 440 hp., 385 hp. and 220 hp. capacities. These are equipped with Taylor and Riley stokers. The forced draft for all the boilers comes from one wind box which is served by two turbine driven fans. Our coal is Ohio slack, which has a heating value of about 11,000 B.T.U. per pound. A steam pressure of 120 lbs. is maintained. The feed water is automatically regulated.

Our desire to make the operation of the boilers as nearly automatic as possible led us to make a careful study of combustion control systems, with the result that we installed a Hagan Master Regulator, Roto-Reciprocating Valve, and Combustion Controller on one of the 500 hp. boilers. This was two years ago. We wanted to try out the system on one boiler before installing it on the entire battery.

The master regulator controls the stack damper of the 500 hp. boiler and also operates the roto-reciprocating valve, which in turn controls the fan turbines. The combustion controller on the 500 hp. boiler regulates the under draft damper. The dampers on the other boilers are regulated by hand.

The master regulator, which is connected to the steam header, is so sensitive that it operates before there is any indication on the steam gauge of a drop in pressure. The drop in pressure causes the master regulator to open the stack damper and speed up the fan turbine through the operation of the roto-reciprocating valve. The combustion controller compensates the air pressure under the stoker in accordance with the fuel bed resistance. The fireman regulates the dampers on the other boilers by hand, trying to duplicate as nearly as possible the action of the Hagan System.

With proper attention to oiling we feel sure that the apparatus will last 20 years, if not longer. This makes the annual depreciation very small. We have not spent one cent for repairs in the two years the system has been in operation. A careful calculation of the cost of the air for operating the system shows that this item amounts to $165.00 per year.

The total annual cost of operation is very small and the complete installation that we intend applying to all the boilers will cost less per boiler, because the one master regulator will take care of all the boilers.

The Hagan system on the one boiler now equipped is effecting a fuel saving of $90.00 per month or $1,080.00 per year. This is about 4% of our fuel cost. Our load varies from 900 hp. to 2,000 hp., and due to the large amount of steam used in process work, the load varies quickly. On many occasions it has jumped from 900 hp. to 2,000 hp. in five minutes. The necessary forcing of the fire is hard on brickwork and grates.

Before installing the system we had to brick up the boiler three or four times a year, but in the last two years this has been done only once. The saving in labor and material amounts to $900.00 per year, which makes the total saving $1,980.00 per year.

Our experience with the Hagan system has proved its great value, and we intend equipping all the boilers within a short time. We will use the master regulator to operate the stack dampers, and have a combustion controller on each boiler to regulate the air pressure under the individual stokers. This will give us an even distribution of load between the boilers, and effect greater savings for each boiler than the present saving on the one boiler.

Besides the equipment in the boiler room, we are using a roto-reciprocating valve to regulate the pumps feeding the accumulator for our hydraulic presses. It beats any other type of valve for sensitive regulation. Even with all the presses working, the up and down movement of the accumulator is very slight.

Eliminates Strains

The valve has eliminated the knocks and strains to which the pumps are usually subjected. It almost seems that the valve anticipates the need for more or less hydraulic pressure because the action is so regular and steady.

Savings Effected by Hagan System

Fuel saving—$90.00 per month x 12 months	1,080.00
Saving in brickwork repairs	900.00
Total saving per year	$1,980.00

This saving is equivalent to a reduction of more than 7% in the annual fuel bill.

Preheated Air Reduces Coal Bill

Supplying Such Air to Stoker Hastens Evaporation of Moisture and Distillation of Volatile Matter

HOW the coal bill of the power plant can be cut by using preheated air was explained to the Association of Iron and Steel Electrical Engineers at its annual convention in Philadelphia by Joseph G. Worker, assistant to the president of the American Engineering Co., of that city.

Combined boiler-furnace efficiencies at 200% of boiler rating will run as high as 90%, Mr. Worker said, while the same stoker using cold combustion air would give an efficiency of around 83% at the same rating. Such a stoker, with preheated air, can be operated at 500% of boiler rating continuously and can be operated to handle peaks of short duration up to 700% of boiler rating.

In proportion to cost, it was pointed out, the greatest economies are obtained by the plant using only a moderate degree of pre-heat, so that the comparatively small plant will gain fully as much from preheating its combustion air as will the large one. The greatest increase in efficiency, Mr. Worker emphasized, is found in the first 100°F. of preheat. Even taking the combustion air from the top of the boiler room helps, while a small installation for absorbing heat from the flue gases will definitely improve combustion conditions in the stoker fuel bed.

The accompanying figures show the comparative performance of a modern stoker with and without pre-heated air. (Figures 1 and 2.)

Mr. Worker explained that the underfeed stoker has kept pace with developments in the use of pre-heated air and that provision has been made for insulating and sealing the elements of the stoker exposed to high temperatures so that the front of the stoker is cool and the heat does not escape into the boiler room. All stoker parts are designed to stand the highest degree of preheat and installations using air at 500°F. to 600°F. are operating successfully.

Supplying preheated air to a stoker hastens the evaporation of moisture and the distillation of volatiles from the coal. As a result, the whole combustion process is speeded up and made more efficient. Preheating the air also reduces the tendency of the coal to form clinkers and in the final stages of combustion helps to burn out the carbon from the ash, saving fuel that otherwise would be wasted in the refuse.

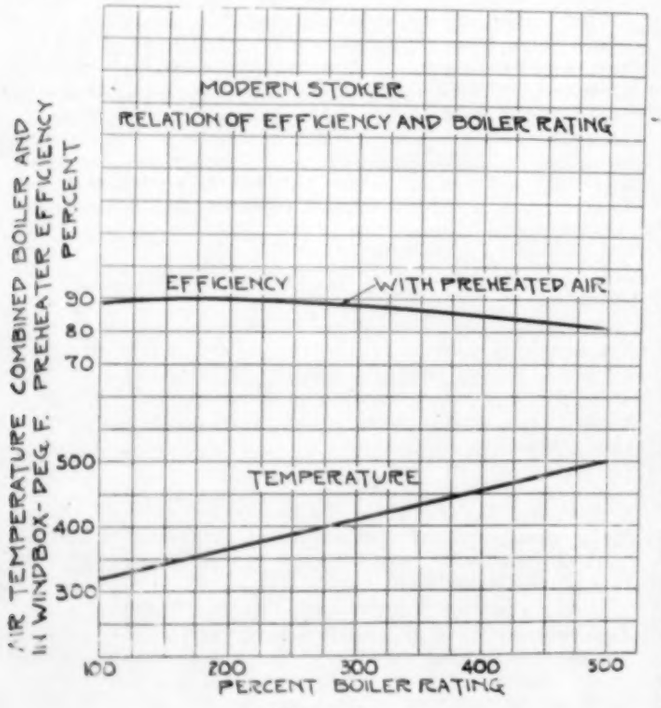

Figure 1

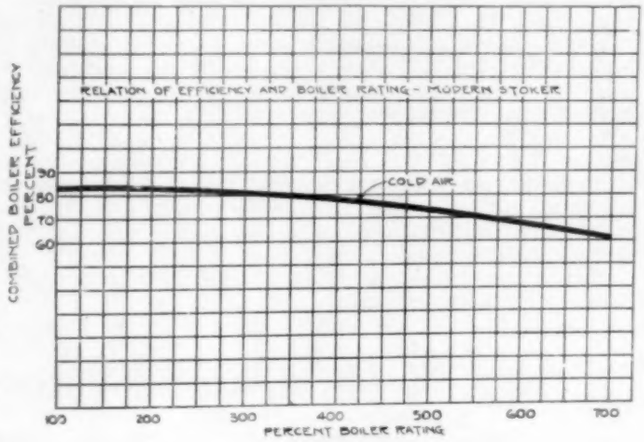

Figure 2

The CO_2 performance with preheated air will range from 15.5 at 250 of boiler rating to 16.5% at 350% rating and above. Combustible loss in the refuse can be reduced to less than 0.35 of 1% of the B.T.U. content of the coal, or to 4.5% combustible in the ash.

Effect of Accelerators on Temperature

Gummi Zeitung, 1925, pages 892-5

If the acetone soluble constituents of Hevea rubber are heated with aqueous alkali for the removal of volatile bases, extracted with light petroleum distillates, for the removal of the unsaponifiable matters, the unsaponifiable resins, and the resin acid then liberated by the addition of sulphuric acid, the re-introduction of the resin acids into the extracted rubber gives a product which combines with sulphur at about half the rate shown by a similar mixture of extracted rubber with the whole of the acetone-soluble matter.

In the presence of litharge the increase in the rate of vulcanization with rise in temperature shows a marked change in the neighborhood of 167 degrees C, because above this temperature the rubber resins begin to react with the sulphur with the formation of hydrogen sulphide which then enters into exothermic reaction with the litharge.

The effect of organic accelerators, such as urea, para toluidine, piperidine, aniline, thiocarbanilide, piperidine piperidine-1-carbothionolate ("piperidyl dithiocarbamate") on the internal heating during vulcanization is greater than that of similar proportions of inorganic accelerators. The attainment of a high degree of vulcanization is accompanied by a high internal development of heat. The additional presence of magnesium oxide is favorable to the process, but appears to have a depressing action on the internal heating except with urea.

Both the thermal and the accelerating effects seem to be dependent on the basic character of the added substances or of their decomposition products. When heated with sulphur at a temperature of 160 to 170 degrees C napthylamine gives a yellow product of the composition $(C_{10}H_7.NH_2)_2S_3$ and hexamethylenetetramine yields cyanogen trisulphide, $C_2N_2S_3$ and derivatives. These products are of little if any vulcanizing value, but their formation during the vulcanization process is accompanied by the formation of active sulphur in the form of pi sulphur.

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WHERE TO OBTAIN

Machinery, fabrics, chemicals, compounding ingredients, crude and reclaimed rubber, consulting chemical and engineering services, etc.

ACCELERATORS—X L O and Diphenyl Guanidine.

Dovan Chemical Corp.

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ACCELERATORS— Every lot is tested before shipment and a written guarantee of quality furnished.

Roessler & Hasslacher Chem. Co.

709 Sixth Ave. N. Y. City

CARBON BLACK–*Micronex* the world's standard gas black, universally known as the "King of Rubber Pigments."

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41 East 42nd St. New York City

CHEMICALS

Refined Pine Tar
(Moisture Free)

Petrolatum--Burgundy Pitch.

E. L. Bullock & Sons, Inc.

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ACCELERATORS—A19, A7, Thiocarbanilid.

The RUBBER SERVICE Laboratories Co.

611 Peoples Savings & Trust Bldg.
Akron Ohio

CARBON BLACK

nine grades for the rubber industry.

Godfrey L. Cabot, Inc.

938-942 Old South Bldg. Boston
611 Metropolitan Bldg. Akron

CHEMICALS and compounding ingredients for the rubber trade.

Harshaw, Fuller & Goodwin Co.

Cleveland, Ohio

ANTIMONY Pentasulphide, golden and crimson, very fine, pure.

Rare Metal Products Co.

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Direct Factory Representation

CARBON BLACK–*Aerfloted* Arrow Black for rubber compounding. Standard for grit-free uniformity.

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CHEMICALS and compounding ingredients; Clay, Whiting, Accelerators, Mineral Rubber.

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ASBESTINE—Specially prepared for use in Rubber. Send for liberal working sample.

SOLE PRODUCERS

International Pulp Co.

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CARBON BLACK — *Black Goose Brand*—free from grit and impurities and imparts high tensile strength to the rubber compound.

Union Power Co., Inc.

310 United Bldg., Akron, Ohio. 607 Com'l. Nat'l. Bank Bldg., Shreveport, La. 25 West 43rd St., New York, N. Y.

CHEMICALS and pigments for the rubber trade. Complete stocks.

Wishnick-Tumpeer Chemical Co.

CHICAGO CLEVELAND BROOKLYN

BEAD CABLES— National Flat Woven and Pratt Patent Bead Cables.

National Standard Co.

Niles, Mich.

CARBONEX — Increases strength and durability of any compound while reducing the cost.

The Barrett Company

40 Rector St., N. Y. City

CLAY — COTT'N BLOSS'M

Brand. Absolutely uniform and gritless. Send for five-pound laboratory sample and prices.

The American Pigment Co.

Ravenna, Ohio

THE MARKET PLACE Section Continued on Second Page Following.

MARKETS

Cottons and Fabrics

NEW YORK, Oct. 15, 1925

The Government report based upon Oct. 1 indications issued on the 8th strikingly refuted charges recently levelled at the Crop Reporting Board that its deliberations were swayed by private estimates and political considerations. This report gave the probable production of lint cotton as 14,759,000 bales against 14,220,000, the average of private estimates, and 13,740,000, the official crop forecast of Sept. 1. The increase in the prospective yield of more than 1,000,000 bales during the past month was attributed by the Board to the beneficial effects of September rains, which revived plants in drouth areas to an unexpected extent, and to the fact that insect damage continues to be almost negligible.

The effect of the unusually good weather experienced last fall, which made possible the late maturity of a large "top" crop and resulted in the Government's estimate of a year ago proving to be more than 1,000,000 bales less than the final cutturn, has not been lost sight of. As a consequence, current expectations are that, in absence of early frost damage this year's yield may easily exceed 15,000,000 bales.

These expectations were strengthened by the Census Bureau Report on the 8th which showed that prior to Oct. 1, 7,101,710 bales had been ginned against 4,527,668 bales for the same period in 1924. The amount ginned to this time last year proved to be 33.2 per cent of the final yield, whereas the ginnings to date are 48.1 per cent of the indicated yield, a percentage which is regarded in some quarters as being too high.

It is probable that in the absence of unfavorable developments, market operations will in future be based on a prospective yield of at least 15,000,000 bales. If, to this amount are added 1,000,000 bales to allow for linters and also last season's carryover which was 2,880,000 bales, a total of 18,880,000 is indicated as available to meet world spinner's requirements for the year. This prospective supply gains significance when compared with the world's consumption of American cotton last year which, according to Colonel H. G. Hester, was 14,247,000 bales.

A survey of world market conditions for cotton made by the United States Bureau of Agricultural Economics indicates that present prospects for marketing the crop are relatively good, but although sufficient time has not elapsed to this writing, lower prices are said to be inevitable.

New York Prices

	Open	High	Low	Close	Close Oct. 1
October	21.45	21.58	21.28	21.32	23.18
December	21.40	21.57	21.32	21.38	23.37
January	20.68	20.85	20.60	20.68	22.64
March	21.03	21.43	20.88	20.95	22.84
May	21.22	21.34	21.08	21.16	23.10

TIRE FABRICS

Prices of tire fabrics are firm, with early deliveries difficult to obtain. Although the market has been quiet, the tone of the trade has been one of confidence. A report from Akron stated that factories there are operating at about 80 per cent of capacity. Mills seem to be satisfied with the market for fabrics inasmuch as most of them have a considerable quantity of orders on their books. Prices have shown little tendency to change as there is less incentive to go after business with price concessions. During the past few days a contract was placed for 250,000 pounds of carded peeler cords. In spite of the belief of many in the trade that tire manufacturers have not entirely covered their 1926 requirements, most of the larger companies, which do not manufacture their own fabrics, are through making commitments.

CORD FABRICS

Combed Sakellarides		Nominal	
Combed Peeler	lb.	Nominal	
Carded Peeler		.51 @	.53
Combed Egyptian uppers	lb.	.67 @	.72
Carded Egyptian uppers	lb.	.62 @	.65

SQUARE WOVEN

17¼-ounce Egyptian uppers, combed	lb.	Nominal	
17¼-ounce Egyptian uppers, carded	lb.	.60 @	.63
17¼-ounce Sakellarides, combed	lb.	Nominal	
17¼-ounce Peeler, carded	lb.	.48 @	.50

Ducks—Business has been quiet at the primary end, although quotations have held up strong in most quarters. Some low prices, however, in connection with single filling duck by mills which seem very anxious to do business. Both single and filling duck continue lifeless as far as contract activity is concerned. The situation in heavy goods has been strong.

Burlaps—As usual, the burlap market has been marked by considerable fluctuation. Spot and afloat prices have been strongly maintained in most quarters, with here and there a seller disposed to mark his goods a trifle below quotations. Resellers were among those offering October shipments, their asking prices being 5 points under direct bazaar offers, although some sales were negotiated at 10-point concessions.

SHEETINGS

40-inch	2.50-yard	yd.	.15	@	—
40-inch	2.85-yard	yd.	.13	@	—
40-inch	3.15-yard	yd.	.14¼	@	.14½
40-inch	3.60-yard	yd.	.11¾	@	.12
40-inch	3.75-yard	yd.	.11¼	@	.11⅓
40-inch	4.25-yard	yd.	.09½	@	—

DUCKS

Belting	lb.	.42 @	.44½
Hose	lb.	.42 @	.42½
Enameling	lb.	.44 @	.47
Shoe Ducks	lb.	.44 @	.47
Single filling	lb.	.19 @	.21½
Double filling	lb.	.22 @	.23½

BURLAPS
(Carload Lots)

7½-ounce	40-inch	9.05	@	9.10
8 -ounce	40-inch	9.35	@	—
10 -ounce	40-inch	12.05	@	12.10
10½-ounce	40-inch	12.20	@	12.25

TIRE FABRICS

OF EVERY DESCRIPTION

TAYLOR, ARMITAGE & EAGLES Inc.

Equitable Building, 120 Broadway, New York

SEA ISLANDS EGYPTIANS PEELERS

FABRICS TO SPECIFICATION

AMERICAN COTTON FABRIC CORPORATION

ALL THE LEADERS

Are represented in this section. Purchasing agents can rely on the concerns listed as thoroughly reliable in every way.

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Send us Your Inquiries.
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West New York, N. J.

DIPHENYLGUANIDINE
Aero Brand, product of the highest purity from dependable source of supply.
American Cyanamid Co.
511 Fifth Ave. New York City.

DRY KILN—for drying crude rubber and chemicals—Hunter Process.
Carrier Engineering Corporation
750 Frelinghuysen Ave. Newark, N. J.

FABRICS—Tire fabrics, Egyptian—Peeler, Karded and Combed, Cord and Square.
Cabarrus Cotton Mills
(Cannon Mills, Inc.)
55 Worth St. New York
327 S. La Salle St. Chicago

FABRICS—Spots and Contracts: Tire Fabrics, Enameling ducks, Tube Wrapping Tapes.
H. Frank Jones
395 Broadway New York City

FABRICS—Tire fabrics—coarse builders, chafers, breakers in all grades.
New England Southern Mills
LAWRENCE & CO.
24 Thomas St. New York
Boston, Philadelphia, Chicago, St. Louis, San Francisco

FABRICS—Tire, cords, enameling ducks, drills, sheetings, osnaburgs.
J. H. Lane & Co.
250 West 57th St. New York City

FABRICS—Tire fabrics of every description, Sea Island, Egyptians, Peelers.
Taylor, Armitage & Eagles, Inc.
120 Broadway New York

FABRICS—Stockinets, Jersey Cloth and Special Fabrics for the Rubber Industry.
U. S. Knitting Co., Inc,
Pawtucket, R. I.

FACTICE—Prevents blooming, makes colors fast and a smoother batch.
Stamford Rubber Supply Co.
Stamford, Conn.

GUAYULE—"Duro" Brand washed and dried ready for compounding.
Continental Rubber Co.
120 Broadway New York

HARD RUBBER, quality hard rubber goods of every description.
Vulcanized Rubber Co.
251 Fourth Ave. New York City

HEEL BURRS—with central holes; flat and cupped.
J. H. Sessions & Son
279 Riverside Ave. Bristol, Conn.

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use vast quantities of raw materials and equipment. Let the industry know how well you can serve it through a listing in this section.

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MANDRELS--CIRCULAR
and Economy Calender Shells
Prompt Service—Let us quote you.
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Tire building equipment; general machine work.
The Akron Equipment Co.
Akron, Ohio

MOLDS & CORES—Tire building machines; tire finishing stands; tubing machines; hydraulic presses.
The Akron Standard Mold Co.
Akron, Ohio

MOLDS & CORES—for automobile tires; general machine work.
Kuhlke Machine Co.
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RECLAIMED RUBBER—
Uniformity, reliability, cleanliness.
Pequanoc Rubber Co.
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RECLAIMED RUBBER—
for all purposes.
Rubber Regenerating Co.
Naugatuck, Conn.

THE MARKET PLACE Section Continued on Second Page Following.

Reclaimed Rubber

NEW YORK, October 15, 1925

Demand for standard grades of reclaimed rubber is continuing in good force from all branches of the rubber industry even with the lessened production reported in several quarters. Reclaimers are still working at capacity and are doing everything possible to increase production facilities. The reclaimed market is firm with no price changes reported. Today's quotations follow:

Friction (Uncured)			
No. 1	lb.	.60 @	.65
No. 2	lb.	.40 @	.45
High Tensile Black			
Super-Reclaim No. 1	lb.	.28 @	.30
" " No. 2	lb.	.16½ @	.17½
Shoe			
Unwashed	lb.	.10½ @	.11
Washed	lb.	.13½ @	.14
Tube			
No. 1 (Floating)	lb.	.26½ @	.27½
No. 2 (Compounded)	lb.	.19 @	.19½
Tires			
Black unwashed	lb.	.10½ @	.11
Black, washed	lb.	.13 @	.13
Black, selected tires	lb.	.13 @	.13½
Dark Gray	lb.	.14¾ @	.15¾
Light Gray	lb.	.15½ @	.16
White	lb.	.19 @	.19½
Truck	lb.	.11 @	.11½
Miscellaneous			
Mechanical Blends	lb.	.08 @	.09
Red, High Grade	lb.	.18 @	.18½

Scrap Rubber

NEW YORK, Oct. 15, 1925

Stocks of scrap rubber are said to be abundant but is being consumed by dealers in large quantities as fast as it can be acquired. Despite the rise in crude rubber prices to $1.00 during the past few days, larger quantities of scrap were reported as available. Dealers are waiting for reclaimers to come into the market but the latter seem to be only purchasing small lots for current requirements in special grades. No large business from this source has been reported in the past two weeks.

Auto tire peelings		.01½ @	—
Standard White auto	ton	35.00 @	—
Mixed auto	ton	23.00 @	23.50
Bicycle tires	ton	10.00 @	11.00
Clean solid truck tires	ton	33.00 @	36.00
Boots and shoes		.02 @	.02¼
Arctics, untrimmed		.01 @	.01¼
Arctics, trimmed		.01⅜ @	.01½
Inner tubes, No. 1		.08½ @	.08¾
Inner tubes, compounded		.07 @	.07½
Inner tubes, red		.05½ @	.05¾
Air Brake Hose	ton	16.00 @	18.00
Rubber hose	ton	13.00 @	15.00

Crude Rubber

NEW YORK, Oct. 15, 1925

Orders from the rubber factories and the report that two steamers carrying approximately 5,000 tons of crude rubber had encountered difficulties at sea which forced them to put back to port for repairs, boomed the market on Oct. 6 to the extent that spot smoked sheets sold up to $1 per pound for the first time since late last July. These two factors, together with strong cables from London, developed a market as hectic and feverish in its price movement as it was in early summer when the commodity jumped from around 40 cents to the peak price of $1.21 reached on July 20.

The business was spread over all grades, although there was particularly heavy buying in the Nov/Dec position around 91 and 92 cents. With only passing attention given to the London market and to reports of the efforts of British manufacturers to end the Stevenson plan of restriction, prices again soared to new high levels on the 8th. Spot smoked sheets sold up to $1.02 a pound and forward positions improved from two to four cents a pound. The bulk of the business was done on the arrivals beyond October, the scarcity of spot and nearby rubber accounting for a nominal interest in these stocks. Nov/Dec was sold at 93 cents and Jan/March advanced to 88 cents. There was good inquiry for the Paras, the quotations for spot and up to the November position ruling around 80 cents.

The strength of the market was due largely to big buying by manufacturers, large tonnage having been contracted for during the day. Impetus was also gained from the report of the possibility of another advance in tire prices, although this was denied by officials of tire companies.

On the 13th market in London, after having touched a low of 46d for spot ribs on rumors that the Colonial Office was considering radical changes in restriction, recovered on the announcement that no steps had as yet been taken. The New York market was quiet, with quotations varying from 99 cents to $1.01. October was irregular, with quotations running as low as 96½ cents. November ranged from 95 to 96 cents and the ideas of buyers 1½ cents under.

Dullness continued in the New York market the following day. In the afternoon on the report of a break in London and lower Singapore cables the whole list declined.

NEW YORK MARKET

Plantations—			
Ribbed Smoked Sheets			
Spot	.94 @	.96	
October	.93½ @	.94½	
November	.91 @	.92	
December	.89½ @	.90½	
Jan./March	.83 @	.83½	
April/June	.76½ @	.77½	
First Latex, crepe spot	.96 @	.97	
Amber Crepe, No. 2, spot	.86 @	.87	
" " No. 3,	.85 @	.86	
" " No. 4,	.83 @	.85	
Brown Crepe, Rolled	.73 @	.75	
" " Clean, thin	.86 @	.87	
" " Specky	.85 @	.86	
Pontianac—			
Bangermassin	.10 @	.10½	
Palembang	Nominal		
Prime Pressed	Nominal		
Sarawak	.07 @	.08	
Paras—			
Up-river Fine	.83 @	.85	
" Medium	.72 @	.74	
" Coarse	.56 @	.59	
Islands, Fine	.67 @	.69	
Acre Bolivian, fine	.76 @	.78	
Tapajos, fine	.68 @	.70	
Cut Beni Bolivian, fine	.67 @	.69	
Caucho Ball—			
Upper, shipment	.54 @	—	
Centrals—			
Corinto, scrap	.49 @	.51	
Esmeraldo, sausage	.49 @	.51	
Guayule, w and d	.50 @	—	
Africans—			
Benguela, No. 2	Nominal		
Congo, upper, black	Nominal		
" " red	Nominal		
Kassai, Prime Red	Nominal		
Balata—			
Block, Columbia	.48 @	.50	
" Cuidad	.58 @	.59	
Surinam ,sheet	.71 @	.73	
Gutta Percha—			
Siak	.20 @	.22	
Red Macassar	3.50 @	—	
Chicle—			
Mexican, Yucatan	.58 @	.68	

LONDON MARKET

Standard Ribbed Smoked Sheets—	
Spot	48 d
November	45½
December	44¾
Jan.-March	39¼

SINGAPORE MARKET

Standard Ribbed Smoked Sheets—	
Spot	42½ d
Nov./Dec.	40¾
Jan.-March	37
April/June	33¼

J. H. LANE & CO.

Tire Fabrics Cord Fabrics

Enameling Duck Drill Sheeting

Osnaburg and Special Constructions

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A standardized grade for every requirement.
U. S. Rubber Reclaiming Co., Inc.
100 E. 42nd St., New York, N. Y.
"42 Years Serving the Industry Solely as Reclaimers"

RED OXIDE—A special grinding, guaranteed uniform in color and quality.
Joseph A. McNulty
114 Liberty St. New York City

RUBBER—Crude and scrap, all grades.
H. Muehlstein & Co.
Liggett Bldg. New York
Akron, Chicago, Boston, Hoboken

RUBBER SCRAP
Always Buying and Selling
Rubber Waste, Cured and Uncured, Hard Rubber, Balata, Gutta Percha.
HERMAN WEBER
Newark & Jackson Sts., Hoboken, N. J.

RUBBER SUBSTITUTES
White, brown and black.
Carter Bell Mfg. Co.
150 Nassau St. New York

RUBBER SUBSTITUTES
All grades — Samples furnished.
Manufactured by
The Westminster Chemical Co.
531 South Peoria St. Chicago

SANITARY GOODS —
Dress Shields, Reducing Garments, Sheetings, Aprons, Bathing Caps, etc.
I. B. Kleinert Rubber Co.
485 Fifth Ave., N. Y. City

LISTING IN THIS SECTION

Places your products among the leaders in the field!

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225 Fourth Ave., New York

SOLVENT RECOVERY EQUIPMENT
50 to 90 Per Cent Recovery
Spadone Machine Co., Inc.
15 Park Row New York
Exclusive Selling Agents for
BENZINE CONDENSATION CO.

SPEED REDUCERS
IXL Speed Reducers, Cut Gears, Micarta Pinions and Timing Gears, Flexible Couplings, Gear Racks, etc.
Foote Bros. Gear & Mach. Co.
238-248 N. Curtis St., Chicago, Ill.

STRIP CUTTING MACHINES
For cutting all rubber, composition and plain or impregnated fabrics.
Cameron Machine Co.
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SULPHUR—*"Tire"* Brand Superfine; *"Tube"* Brand Velvet; quality Sulphur for the rubber trade.
Stauffer Chemical Co.,
of Texas.
Seanlon Bldg. Houston, Texas
San Francisco, Cal. Chauncey, N. Y.

TAR—PINE, RETORT, KILN
All grades for the rubber manufacturer.
Pensacola Tar and Turpentine Co.
Gull Point, Florida

THERMOMETERS—Recording, controlling temperature and pressure controllers.
American Schaeffer & Budenberg Corp.
Berry & South Fifth Sts., Brooklyn

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MOLDS & CORES
The Akron Rubber Mold & Machine Co.
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TRIMMERS—OVERFLOW
For Heels, Soles and Mechanical Rubber Goods.
Designers of Special Machinery
Arthur Jackson Wills Co.,
North Brookfield Mass.

USED MACHINERY
Mills, Calenders, Grinders, Washers
New and Old Rubber Scrap
Rubber Cloth Remnants
M. Norton & Co.
Locust St. Medford, Mass.

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manufactured from *Genuine English Chalk* and *Cliffstone*—no adulterations.
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ZINC OXIDES — Including KADOX and "Albalith."
The New Jersey Zinc Sales Company
New York Pittsburgh Chicago
Cleveland San Francisco

CHEMICALS & COMPOUNDING INGREDIENTS

Accelerators — Colors — M.R. — Compounding Ingredients
Softeners — Vulcanizing Ingredients — Rubber Substitutes

NEW YORK, October 15, 1925—Despite the let-up in production in most tire and mechanical goods plants, manufacturers and dealers in chemicals and compounding ingredients report a satisfactory volume of business. Some factors in the industry report that demand from rubber manufacturers has lessened somewhat but on the other hand others express surprise at the excellent business being done. This condition is expected to continue for the next sixty days after which full production will be again resumed. Prices are firm with few changes of importance noted. Accelerators, carbon black and zinc oxide are especially strong and in good demand. Quotations follow:

ACCELERATORS

Organic			
Aldehyde ammonia, crystals	lb.	$ .90 @	.93
Aniline oil, drums	lb.	.17 @	.17½
Di-Ortho-Tolylguanidine	lb.	1.10 @	1.13
Diphenylguanidine	lb.	.95 @	.98
Ethylidene aniline	lb.	.60 @	.65
Excellerex	lb.	.28 @	.34
Formaldehyde-Aniline	lb.	.40 @	.42½
Grasselerator 102	lb.	.80 @	.82
Grasselerator 552	lb.	4.80 @	5.00
Hexame hyl ne-tetramine	lb.	.80 @	.82½
Paraphenylenediamine	lb.	1.25 @	1.30
Piperidine-Piperidyldithio-Carbamate	lb.	4.80 @	5.00
Super-Sulphur No. 1	lb.	.50 @	.55
Super-Sulphur No. 2	lb.	.18 @	.30
Tensilac, No. 41	lb.	.65 @	—
Tuads	lb.	4.50 @	5.00
Thiocarbanilide, kegs	lb.	.25 @	.32
Triphenylguanidine	lb.	.70 @	.75
Vulcone	lb.	.75 @	.79
Zimate	lb.	5.00 @	—
Inorganic			
Lead, sublimed blue	lb.	.10 @	—
Lead, white	lb.	.10¾ @	—
Litharge, domestic	lb.	.11½ @	—
Lime, superfine	lb.	.01½ @	.02
Magnesia, calcined,			
light	lb.	.24 @	.25
extra light	lb.	.40 @	.45
heavy	lb.	.04 @	.06½

COLORS

Blacks			
Arrow "Aerfloted"	lb.	.07½ @	.12
Bone Black	lb.	.05½ @	.11
Carbon "	lb.	.08 @	.12
Drop "	lb.	.07½ @	.14
Ivory "	lb.	.12 @	.45
Lamp "	lb.	.12 @	.40
Micronex	lb.	.09 @	.13
Thermatomic carbon	lb.	.04 @	.08
Blues			
Cobalt	lb.	.21 @	.26
Prussian	lb.	.34 @	.35
Ultramarine	lb.	.08 @	.35
Browns			
Iron oxide	lb.	.02¼ @	.06¼
Sienna, Italian	lb.	.04 @	.14
Umber, Turkey	lb.	.04 @	.06
Vandyke, domestic	lb.	.03 @	.03½
Greens			
Chrome, light	lb.	.28 @	.30
medium	lb.	.30 @	.32
dark	lb.	.31 @	.34
commercial	lb.	.09 @	.10
Chromium Oxide, bbl.	lb.	.37 @	.38
Reds			
Antimony			
crimson, 15/17 F.S.	lb.	.43 @	.45
sulphur free	lb.	.46 @	.49
golden, 15/17 F.S.	lb.	.17 @	—
pentasulphide,			
pure,	lb.	.35 @	.38
15/17 F.S.	lb.	.33 @	.36
red sulph.15-17F.S.	lb.	.16 @	.20
Indian English	lb.	.11 @	.15
Oximony	lb.	.13½ @	—
Para toner	lb.	.90 @	1.00
commercial	lb.	.13½ @	.14½
Red oxide, reduced	lb.	.04 @	.12
pure	lb.	.11 @	.15
Toluidine toner	lb.	1.85 @	2.10
Venetian red	lb.	.01½ @	.05
Vermillion, quicksilver,			
English	lb.	1.35 @	1.40
domestic	lb.	.15 @	.25
Whites			
Albalith	lb.	.05⅞ @	.06⅛
Aluminum bronze		— @	—
Lithopone, Akrolith	lb.	.06 @	.06½
Lithopone, Azolith	lb.	.05⅝ @	.06⅛
Zinc Oxide—American Process			
XX red	lb.	.07½ @	.07¾
Kadox,			
black label, kegs	lb.	.10⅝ @	.11¼
blue " " "		.09⅝ @	.10⅛
red " " "		.08⅝ @	.09⅛
American Azo:			
ZZZ (lead free)	lb.	.07¼ @	.07¾
ZZ (under 5% leaded)	lb.	.07 @	.07½
Z (8-10% leaded)	lb.	.06¾ @	.07¼
Zinc Oxide—French Process			
White seal	lb.	.11⅞ @	—
Green seal	lb.	.10⅝ @	—
Red seal	lb.	.09⅝ @	—
Yellows			
Chrome, light		.17½ @	.18½
dark and medium	lb.	.17½ @	.18½
Cadmium Sulphide	lb.	1.20 @	1.50
Ochar, French medium	lb.	.03⅜ @	.03½
domestic	lb.	.01½ @	.02½

COMPOUNDING INGREDIENTS

Aluminum Flake			
(f.o.b. plant)	ton	21.85 @	24.50
hydrate light	lb.	.16½ @	.17½
Ammonia carbonate	lb.	.11 @	.12½
Asbestine	ton	14.50 @	18.50
Barium carbonate	ton	54.00 @	56.00
Barium Dust	lb.	.05 @	.06
Barytes southern off-color,	ton	12.00 @	18.00
Western prime white	ton	22.00 @	23.00
imported	ton	27.00 @	35.00
Basofor	lb.	.04¼ @	—
Blanc fixe dry f.o.b. works	lb.	.03¾ @	.04
Carrara filler	lb.	.01¾ @	.02
Chalk, precip., extra light	lb.	.04½ @	.05
heavy	lb.	.03¼ @	.04
Clay, China, domestic	ton	15.00 @	25.00
Catalpo (fact.)	ton	35.00 @	38.00
Dixie	ton	20.00 @	35.00
Blue Ridge, Dark	ton	9.00 @	—
" " Light	ton	12.00 @	—
Langford	ton	12.00 @	22.00
Glues, extra white	lb.	.20 @	.29
medium white	lb.	.18 @	.24
common bone	lb.	.11 @	.14
Graphite flake, bbls.	lb.	.06½ @	.12
Infusorial earth, powdered	ton	23.00 @	25.00
bolted	ton	15.00 @	20.00
Liquid latex	gal.	3.00 @	—
Magnesia,carbonate	lb.	.08¼ @	.09
Mica, powdered	ton	65.00 @	80.00
Rotten Stone (powdered)	lb.	.05 @	.07
Soapstone, powdered	ton	15.00 @	22.00
Starch, powdered	cwt.	3.81 @	—
Talc, domestic	ton	16.00 @	18.00
Terra Alba	cwt.	1.25 @	2.00
Tripoli, white	lb.	.02 @	.02¼
Whiting, commercial	cwt.	1.00 @	1.15
gilder's bolted	cwt.	1.25 @	1.35
English cliffstone	cwt.	1.50 @	—
Paris whiteAmerican	cwt.	1.25 @	1.50
Quaker	ton	13.00 @	15.00
Sussex	ton	8.00 @	10.00
Wood pulp XXX	ton	35.00 @	—
" " X	ton	25.00 @	—

MINERAL RUBBER

Genasco (factory)	ton	50.00 @	52.00
Granulated M.R.	ton	36.00 @	45.00
Hydrocarbon, Hard	ton	29.00 @	35.00
Hydrocarbon, Soft	ton	29.00 @	35.00
320/340 M.P. hydrocarbon (c. l. factory)	ton	47.00 @	52.00
300/310 M.P. hydrocarbon (c. l. factory)	ton	42.00 @	47.00
Paradura	ton	70.00 @	75.00
Robertson, MR, solid	ton	25.00 @	37.00
M.R. (gran)	ton	42.00 @	80.00

SOFTENERS

Acids			
Acetic, 28%	cwt.	3.00 @	3.25
Cresylic, 97%	gal.	.57 @	.64
95%		.55 @	.60
Muriatic, 20%	cwt.	.90 @	1.00
Nitric, 36 degrees	cwt.	4.50 @	4.75
Sulphuric, 60 degrees	ton	10.00 @	11.00
66 degrees	ton	14.00 @	15.00
Tartaric, crystals	lb.	.29 @	—
Alkalies			
Caustic soda, 76%	cwt.	3.20 @	—
Soda ash, 58% C.L.	cwt.	1.43 @	1.45½
Oils			
Castor, No. 3 bbls.	lb.	.15¼ @	—
Corn, crude, bbls.	lb.	.12½ @	—
refined	lb.	.14 @	—
Cottonseed, crude		.09 @	.09⅛
Glycerine C.P. drums	lb.	.19½ @	.20
Linseed,RawC.L. bbl.	gal.	1.00 @	—
Palm, Niger	lb.	.09¼ @	—
Lagos	lb.	.09½ @	—
Peanut,domestic,crude	lb.	.13 @	—
Petrolatum, white		.10½ @	.10¾
amber		.03½ @	.03⅝
dark amber	lb.	.03¼ @	.03⅜
Pine, steam distilled	lb.	.63 @	.65
Rapeseed, refined	gal.	1.02 @	1.03
blown	gal.	1.18 @	—
Rosin, first rectified	gal.	.82 @	.83
second rectified	gal.	.86 @	.87
Soya Bean, crude		.13¼ @	.13½
Tar, commercial	gal.	.30 @	.32
Resins and Pitches			
Parra M.R.	lb.	.06 @	.07
Tar Retort	bbl.	15.00 @	15.50
kiln burned	bbl.	15.00 @	15.50
Pitch, Burgundy	lb.	.06 @	.06½
coal tar	gal.	.05½ @	.06
pine	bbl.	6.50 @	7.00
Rosin, grade K	bbl.	15.95 @	—
Solvents			
Alcohol denatured,			
No. 1 bbls.	gal.	.60½ @	.64½
Benzol, 90%	gal.	.28 @	.30
pure		.32 @	—
Carbon bisulphide	lb.	.06 @	.07
tetrachloride	lb.	.06¾ @	.07
Dimethylaniline	lb.	.32 @	.34
Motor gasoline,			
steel bbls.	gal.	.17 @	—
Naptha, V. M. & P.	gal.	.16¾ @	—
Toulene	gal.	.31 @	—
Turpentine, spirits	gal.	1.13 @	1.14
wood	gal.	.95 @	.96
Waxes			
Beeswax	lb.	.55 @	.65
Carnauba, No. 1	lb.	.37 @	.38
Ceresin, white	lb.	.10 @	.11
Montan, crude	lb.	.06 @	.06½
Ozokerite, black	lb.	.24 @	.25
green	lb.	.26 @	.30
ParaffineWhite,A.M.P.	lb.	.05½ @	.05⅝
Yellow A.M.P.	lb.	.05⅜ @	.05½
Sweet wax	lb.	.12 @	—

SUBSTITUTES

Black	lb.	.08½ @	.15
White	lb.	.10½ @	.17½
Brown	lb.	.10 @	.16
Brown factice	lb.	.10 @	.16
White factice	lb.	.10½ @	.17½

VULCANIZING INGREDIENTS

Black hyposulphite	lb.	.18 @	.20
Ethyl Chloride, Cyl.	lb.	.55 @	—
" " Drums	lb.	.45 @	—
Sulphur Chloride (drums)	lb.	.04½ @	.05
Sulphur flour			
Commercial bags	cwt.	1.35 @	1.70
" bbls.	cwt.	1.70 @	—
Superfine, bags	cwt.	2.00 @	2.40
" bbls.	cwt.	2.40 @	2.70
100% pure, refined,			
bags	cwt.	2.20 @	3.00
bbls.	cwt.	2.50 @	3.40

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REVUE GENERALE DU

CAOUTCHOUC

New monthly trade and technical paper covering all phases of the rubber trade in France.

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Paris (1er)

STATEMENT OF THE OWNERSHIP, MANAGEMENT, CIRCULATION, ETC., REQUIRED BY THE ACT OF CONGRESS OF AUGUST 24, 1912, of THE RUBBER AGE published semi-monthly at Highland, New York for October 1, 1925.

State of New York
County of New York } ss.

Before me, a notary public in and for the State and county aforesaid, personally appeared Peter P. Pinto, who, having been duly sworn according to law, deposes and says that he is the Business Manager of THE RUBBER AGE and that the following is, to the best of his knowledge and belief, a true statement of the ownership, management, etc., of the aforesaid publication for the date shown in the above caption, required by the Act of August 24, 1912, embodied in section 411, Postal Laws and Regulations, to wit:

1. That the names and addresses of the publisher, editor, managing editor, and business managers are:

Publisher Gardner Publishing Company, Inc., Highland, New York; Editor G. H. Trimingham, 225 Fourth Avenue, New York City; Managing Editor None; Business Manager Peter P. Pinto, 225 Fourth Avenue, New York City.

2. That the owner is: (Is owned by a corporation, its name and address must be stated and also immediately thereunder the names and addresses of stockholders owning or holding one per cent or more of total amount of stock. If not owned by a corporation, the names and addresses of the individual owners must be given. If owned by a firm, company, or other unincorporated concern, its name and address, as well as those of each individual member, must be given).

Gardner Publishing Company, Inc.; Lester D. Gardner, 225 Fourth Ave., New York City; Earl D. Osborn, 225 Fourth Ave., New York City.

3. That the known bondholders, mortgagees, and other security holders owning or holding 1 per cent or more of total amount of bonds, mortgages, or other securities are:

Lester D. Gardner; The Gardner, Moffat Company, Inc.

4. That the two paragraphs next above, giving the names of the owners, stockholders, and security holders, if any, contain not only the list of stockholders and security holders as they appear upon the books of the company but also, in cases where the stockholder or security holder appears upon the books of the company as trustee or in any other fiduciary relation, the name of the person or corporation for whom such trustee is acting, is given; also that the said two paragraphs contain statements embracing affiant's full knowledge and belief as to the circumstances and conditions under which stockholders and security holders who do not appear upon the books of the company as trustees, hold stock and securities in a capacity other than that of a bona fide owner; and this affiant has no reason to believe that any other person, association, or corporation has any interest direct or indirect in the said stock, bonds, or other securities than as so stated by him.

Peter P. Pinto, Business Manager.

Sworn to and subscribed before me this 30th day of September 1925.
[Seal] JACQUES A. SCORDATO, Notary Public
(My commission expires March 30, 1927.)

EDITOR'S REVIEW DESK

Books **Trade Catalogs** **Articles**

RAHWEDIA: A True Romance of the South Seas. By C. Harold Smith, (President, Binney & Smith Co., New York). 12 mo. Illustrated in color and black and white. Published by D. Appleton & Co. $2.50.

It is seldom possible that an author can so far detach himself from the religious and social traditions of his race to write of the customs, beliefs and superstitions of a totally different people in a vein untouched by prejudice. Literature attempting to interpret to one people the soul of another, usually reveals a lack of sympathy and in cases where justice has been done, the quality of the work shows the great effort on the part of the author to hold back his pet notions on racial superiority. But in this story of the Maoris, C. Harold Smith has given us a picture of a people, intense and moving, because he himself entered into their life, and because in his canvas he paints the spectacle as he saw it, leaving out no detail.

The author's contact with this remote people is a revelation. Tribal laws, the origin of which is lost at that point where myth ends and history begins, are shown us in their reaction on communal life. Maori industries, games, amusements, art, and music pass before us as vital facts in the existence of this race and a background of quaint and ancient religious beliefs is used to throw into relief the love story which animates the entire book, and whose tragic climax merely heightens the beauty of the story.

Rahwedia is a distinct contribution to the literature depicting the life of the South Seas. It should be read not only by those interested in the adventurous and unusual, but also by those whose imaginations quicken when brought face to face with the ethics of a civilization not theirs, but worthy of their study.

Mr. Smith's many friends in the rubber industry will undoubtedly be glad to know he has written "Rahwedia."

* * *

THE MORE COMPLETE EVALUATION OF THE PIGMENT REENFORCEMENT OF RUBBER. By William B. Wiegand. Presented before the Division of Rubber Chemistry at the 69th Meeting of the American Chemical Society, Baltimore, Md., April 5 to 10. Published in *Industrial and Engineering Chemistry* for September.

The proof resilience measured, for example as foot pounds of energy stored in one cubic inch of the unstressed sample, has attained wide acceptance as perhaps the most generally useful single criterion of the quality of vulcanized rubber. It is most conveniently measured as the area subtended on the strain axis by the stress-strain curve. In the study of the physical properties of compounded rubber the proof resilience is seen to exhibit the properties of a single member of a series of mixings which may be regarded as a continual progression from the uncompounded base to the upper limit of pigmentation as fixed either by choice or by absorptive capacity of the base. The compiler of this article accompanies his description with figures and sketches and gives the results of his research through tables and detailed explanatory matter.

* * *

NATIONAL DIRECTORY OF COMMODITY SPECIFICATIONS. Department of Commerce, Bureau of Standards. 379 pp. 7¾" x 10¾". Bound in green linen. Stamped in gold. Government Printing Office. Net $1.25.

This comprehensive volume represents the first attempt on the part of the Department of Commerce to collect and publish a classified list of existing commodity specifications formulated not only by public purchasers but also by the nationally recognized associations, technical societies and public utilities. To an ever increasing extent state and city governments, public utilities and the better organized industries are adopting the use of specifications, which have been a feature of Federal Government purchasing for many years.

Information regarding the best known specifications for more than 6,000 commodities is given in convenient form in this directory. The book tells not only what specifications are in general use but also by whom they were prepared and where copies may be obtained. In it are conveniently indexed for ready finding about 27,000 specifications prepared by the Federal Specifications Board, the separate departments of the Government and outside organizations.

The contents include a statement and endorsement by the Advisory Board, which assisted in supervising the preparation of the directory; a foreword by Herbert Hoover; a thoroughly classified list of specifications for all types of commodities; an alphabetical list of commodities which serves as an index to the specifications; and directions for obtaining copies of specifications listed.

The specifications listed include those of a wide variety of rubber goods.

* * *

INTERNATIONAL TRADE IN MACHINERY BELTING. Compiled by E. G. Holt, Assistant Chief, Rubber Division, United States Department of Commerce.

This should prove a valuable reference booklet for statisticians, manufacturers and executives of the rubber industry. It contains data relative to the export trade in all classes of belting for the years 1920 to 1924 inclusive and outlines the part taken by each principal country of the world in the exporting of machinery belting. Special data regarding the American belting industry is given. Copies may be obtained from the Superintendent of Documents, Government Printing Office, Washington, at 15 cents each.

* * *

OUR WORLD TRADE, January-June, 1925. Nineteenth Quarterly Issue. Issued by Foreign Commerce Department, Chamber of Commerce of the United States, Washington, D. C.

Crude rubber today is our third leading import, as compared with fourth last year. During the period covered by this report, this commodity to the value of $148,144,000 was imported into the United States, marking a gain of 69.3 per cent, and totaling 430,755,000 lb., against 363,918,000 lb. for the same period of 1924.

* * * *

FOOTE IXL SPEED REDUCERS. 8¼" x 11". 80 pp. Foote Bros. Gear & Machine Co., Chicago, Ill.

Engineers and plant executives who must deal with transmission gearing and speed reduction problems will find the information contained in this new revised edition of IXL Speed Reducer Book of great interest. Illustrations, formulae, tables and data are included. Pages 22 to 24 and 57 to 60 deal with the calculation of speed and worm gear speed reducer problems. This catalog will be sent free to engineers and plant executives.

* * *

THE TAG RECORDER CATALOG. No. 905B. 8½" x 11". 78 pp. C. J. Tagliabue Mfg. Co., Brooklyn, N. Y.

This catalog has been carefully planned for the convenience of users. The reader may find in it an answer for every relevant question that arises in connection with the products described. Necessary information is repeated several times in order that it will not be overlooked. In the preparation of the catalog illustrations were used wherever they would add interest to or augment the text. It is a comparatively simple matter for the technical man or purchasing agent to order an instrument when he has this comprehensive catalog on his desk.

* * *

BROWN THERMOMETERS. Catalog 64. 7¾" x 10". 56 pp. The Brown Instrument Co., Philadelphia, Pa.

A feature of this catalog are the illustrations which show recording thermometers in use in various factories. Charts in color illustrate recording periodic manipulations so clearly that the text need hardly be referred to for an explanation. The catalog is of handy size, printed in large type on coated paper and is well arranged. Separate catalogs are issued for the other products of the company, inasmuch as this one is mainly devoted to thermometers and parts.